# Punchmarked Coinage of the Indian Subcontinent

## Magadha-Mauryan Series

P L Gupta & T R Hardaker

*Revised Edition*

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## Magadha-Mauryan Series

PL Gupta and TR Hardaker

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# PREFACE TO THE FIRST EDITION

When this work was first conceived in the late 1960s, there existed a wide gap in the numismatic literature of the ancient Indian period. To fill this entirely, i.e. to cover not only the silver punchmarked coins but also the many other series of ancient Indian coins, would be an undertaking which no single author could carry out in a truly definitive way. Even the punchmarked coins themselves could not, without extensive research in India and elsewhere be fully catalogued, let alone attributed or discussed in a historical context.

It was therefore decided to limit this study to the-one series of coins which could be discussed, classified and listed in a reasonably comprehensive way. Because this also happens to be by far the commonest series of punchmarked coins, the catalogue will serve to identify most of the specimens available to collectors and students.

The basis of this work is the unpublished Ph.D. thesis of Dr.ParmeshwariLal Gupta (1959), which for the first time listed all the then known varieties in this series of coins. This was supplemented in 1963 by his work on the Amaravati hoard of silver punchmarked coins. The present Catalogue is an updated version of these works in which Hardaker has redrawn all the symbols, subdivided and extended the six original "periods", and adopted a new system of numbering. The new varieties which have appeared since 1963 have also been incorporated. The Catalogue and the text represent the joint views of both authors.

Since our work began, many of the punchmarked coins covered here have been photographically recorded in works by Michael Mitchiner. In his book The Ancient and Classical World, the same symbol drawings and numbering system have been used as in the present work.

Punchmarked coins are still on the frontier of numismatic research. In this situation a catalogue cannot be declared complete, as new varieties are likely to appear subsequently. The method of cataloguing employed here allows for new varieties to take their place without upsetting the general classification, thus hopefully prolonging the useful life of this as a reference work.

The authors are grateful to the following for permission to reproduce photographs of their coins:
The Department of Coins and Medals, the British Museum, for coins 142, 285, 363, 367, 371, 387, 393, 427, 468, 484, 522, 527, 560, 572; The Heberden Coin Room, the Ashmolean Museum, Oxford, for coin 65; Michael Broome for coins 39, 45, 46, 61, 62, 64, 71, 78, 80, 85, 87, 99, 108, 115, 118, 129, 130, 131, 132, 138, 140, 153, 158, 160, 163, 164, 189, 193, 213, 217, 218, 226, 233, 243, 246; Michael Mitchiner for coins 210, 238; Craig Burns for coins 232, 242.

The authors are also grateful to Michael Dudley whose care in photographing the bulk of the coins has enabled a high standard of reproduction, and Cook, Hammond & Kell Ltd., who printed the plates.

March, 1985

P.L. Gupta
T.R. Hardaker

# PREFACE TO THE SECOND EDITION

Some 37 years have elapsed since the original draft of this Catalogue was prepared. During this time punchmarked coinages have become more widely known and recognised as having important information to offer in the early history of the subcontinent of India. At the same time, more varieties have come to light, and still do so every year. Many of these coins possess features such as odd shapes, large size, or unusual designs, which have attracted the attention of scholars and collectors alike, not only in the subcontinent but also in Europe, North America, Asia, and indeed worldwide. In parallel market prices have risen, and some of the rarest are now seen as investment items as well as treasures of great historical interest.

During this time too, one of the original authors, Dr Parmeshwari Lal Gupta, sadly passed away. It falls to the surviving author to try to present a revised edition which carries on the spirit of Dr. Gupta's pioneering energy and scholarship. It is perhaps appropriate that this edition is published in the centenary year of Dr. Gupta's birth.

The vexed question of the date of origin of coinage in India (and therefore the date of the coins in this catalogue), has been much debated. In his later years, Dr. Gupta leaned towards a theory that punchmarked coinage originated much earlier than we first advocated. His ideas may be read in the Numismatic Digest for 1994. At the same time, others (e.g. Cribb 2005) have argued for a later date. It may never be possible to reach a precise conclusion on this subject, although most of the new the evidence points to a later chronology. The primary aims of this second edition are therefore to concentrate on the coins themselves and present an up-to-date list of the different varieties. At the same time the different arguments and range of options about the dates and rulers are laid out so readers can form their own opinions.

Since publication of the first edition, there has been a shift in emphasis in the approach to the ancient history of the subcontinent. Whereas once the coinages were made to fit the ancient texts with their lists of kings and states, more emphasis is now placed on the coins themselves, which are almost the only 'hard' evidence in the history of the time. Although the historical narratives have much to say about the period, we know far too little about their date, circumstances of origin and purpose to accept them as absolute truth. Far better then to take the coins as the starting point and see if the historical narrative tallies. If as a consequence we can no longer ascribe particular coins to particular rulers, so be it.

The number of types listed in the first edition (including addenda) was 613. This has risen to 907 in the second edition (like-for-like, i.e. excluding new categories of coins added here). In parallel with the increase in the numbers of new types ascribed to the Magadha-Mauryan series, more have also been discovered belonging to the pre-Imperial period. Some of these coins have findspots which coincide with the likely homeland of Magadha, and some also bear the Magadhan 'hallmarks' of six-armed symbol and sun. It is appropriate therefore to include these coins as representing the earliest coinages of Magadha, and possibly one of the earliest of all the punchmarked series. They are added as 'Series 0' so as not to disturb the original classification. At the other end of the timescale, we now have more coins of the post-Imperial period, when the influence of the *karshapana* can be seen in the retention of the punchmarking technique and some of the Mauryan symbology. These coins too have been added as 'Series VIII'. When all these are added in, together with a new category called 'Unclear coins', the total rises to 1043.

The present volume is not of course a complete list of all punchmarked coins, but simply covers the issues of Magadha and its successor the Mauryan Empire, a large part of which comprise the *karshapana* denomination of 3.54 grams. The early *janapada* states of the subcontinent, and various breakaway states at the end of Mauryan hegemony, issued other coins not covered here.

Towards the terminal period of Mauryan coinage, a fractional series of 'punchmarked' coins re-appears, which numismatists have termed *mashakas*. Strictly they are not punchmarked because there is only one 'punch' (i.e. a die). Although these coins belong to the Magadha-Mauryan series, they are omitted here, having already been published in Hardaker, T.R., *The Mashaka Fractional Coinage of Ancient India,* (IIRNS in 1999).

The inclusion of very early and very late coins means the title of the first edition, 'Ancient Indian Silver Punchmarked coins of the Magadha-Mauryan *Karshapana* Series' is no longer appropriate – the coins include some which are not *karshapanas* and some that are not silver. The new title reflects these changes. As the Catalogue is commonly referred to as 'GH' rather than by its title, it is hoped this will not cause confusion.

The first edition used a classification which would as far as possible allow new types to be incorporated without disturbing the existing type numbers. Types were numbered sequentially as well as generically; and as anticipated most dealers and students have used the sequential system. In the second edition therefore this remains unaltered, and new varieties are appended using a,b,c, etc. Where new classes (i.e. coins where there is an entirely new third mark) occur, they are placed at the end of the series to which they belong.

The many new types have helped clarify the chronology, especially in Series I. Rather than re-arrange all the numbering to accommodate what is still a very tentative subject, chronology is discussed in the text. An attempt has been made to illustrate more examples, and these are placed in the Catalogue alongside the type descriptions rather than in plates at the end. Additionally, selected examples which may display challenging identification problems are shown at enlarged size at the end.

The new edition contains very little of the original text, and the Catalogue section has been entirely recompiled to incorporate the new types. The name of P.L.Gupta is however retained in recognition that without the benefit of his lifelong study, which enabled him to list and describe the types so accurately, no second edition could ever have come to print.

New text introductions to each Series are now added in the Catalogue section. Although these texts repeat some of the main narrative in Section 2, readers wishing to study a particular Series can now quickly target the relevant background information in the Catalogue section.

In a lengthy online discussion about a disputed punchmarked coin which appeared on e-Bay in 2002, one of the discussants remarked “GH is NOT the last word on PMCs”.The changes in this new edition would amply confirm that assertion. In such a fluid field there will seldom be a 'last word': putting something into print certainly does not prove its truth, but it has clearly encouraged debate. At the same time it is hoped the combined total of over 100 years of study of punchmarked coins by the two authors of 'GH' may leave it as close to truth as can currently be achieved.

This book is both a catalogue and a commentary. Collectors may not choose to follow the close-focus arguments that draw every aspect of evidence from the coins, but this approach is surely at the heart of numismatics, allowing us to come as closely as we can to the truths of the past. Assuming readers seek to learn as much as possible about the coins they encounter, the questions that the coins themselves provoke are discussed even when the answers are often only conjectural. I hope these discussions will help to portray the coins as small pieces in the jigsaw of the human past. The society into which punchmarked coinage was introduced was at the juncture between prehistory and history. It therefore represents one of the subcontinent's few tangible relics, and its political, economic and social comment has been under-used.

Readers of this book may range from experienced scholars to collectors just beginning. The two audiences would be far apart. I have tried to occupy the middle ground, providing enough explanation of unfamiliar terms for those only mildly acquainted with ancient Indian history, but embodying enough detail to serve as a reference work for all levels of study. I hope in so doing I shall satisfy as much of the potential readership spectrum as possible.

Oxford, October 2013 Terry Hardaker

### In this section

*General Introduction*

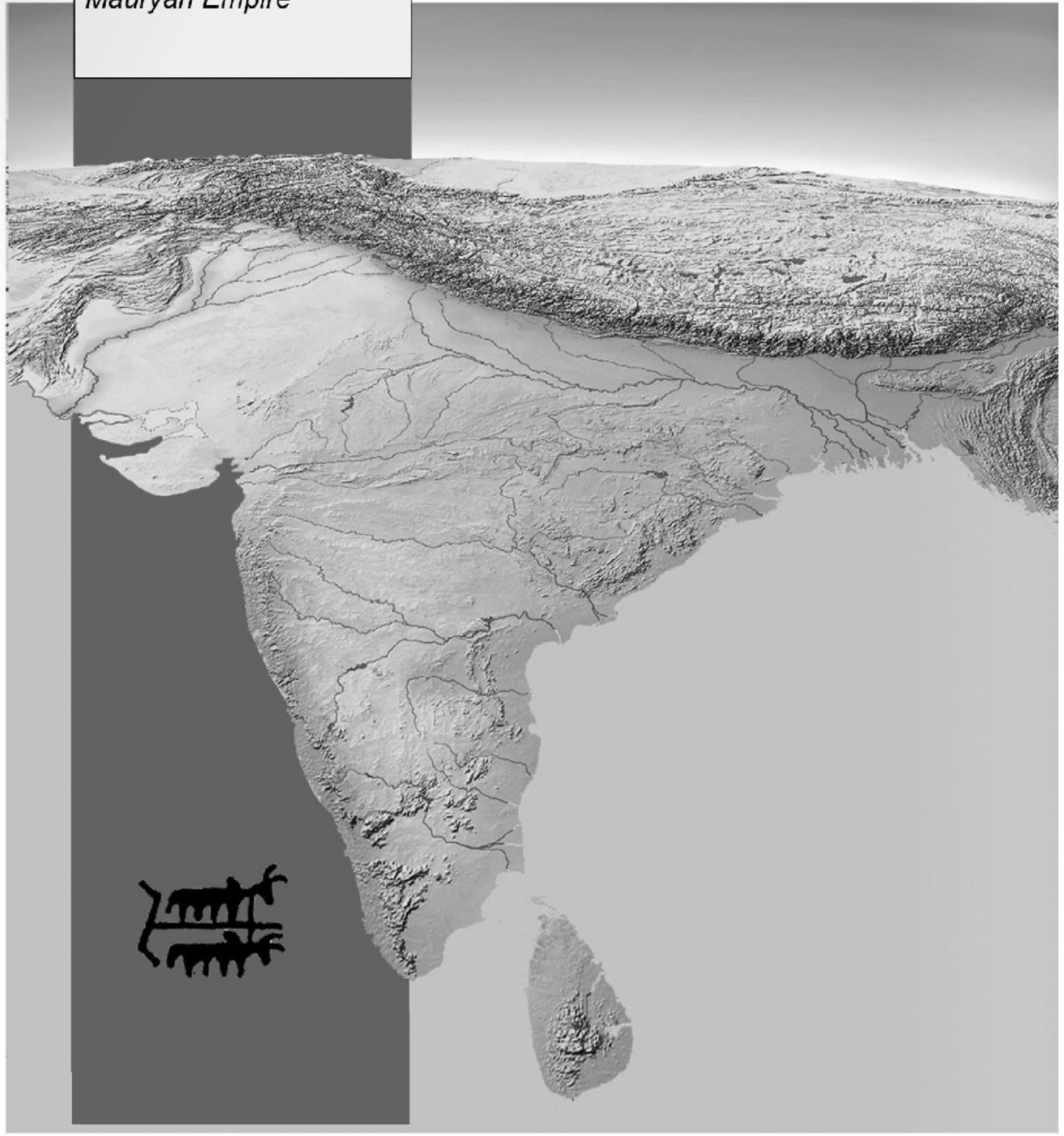
*Geographic setting*

*Historical outline of Magadha*

*Historical outline of the Mauryan Empire*

# SECTION 1

# Geographic and Historical Background



## General Introduction

The earliest coins of the Indian subcontinent may be no match for those of the Classical world in terms of artistic achievement, but they play perhaps an even greater role in reconstructing history, since in the subcontinent the written records from those times are fewer and less precise.

During most of the western Classical period, Asiatic dynasties were coining their own money, often in great abundance, and sometimes in curious forms with punchmarks instead of dies. After they were first noticed by Europeans in the nineteenth century, these coins appealed to a handful of collectors and students of each generation for whom their interest lay in their mystery. Low in market value, poorly manufactured, and often unidentifiable, they were ignored by the majority of numismatists.

Slowly, scientific methods of analysis were applied to the punchmarked series that forms the root of coinage in the Indian subcontinent. Employees of the British colonial administration such as James Prinsep or Alexander Cunningham made a start in the nineteenth century, but the part played by Indian scholars in this process was central to today's understanding of the subject. Notable amongst these scholars were Durga Prasad, whose meticulous descriptions and insight set the punchmarked coinage on a new footing from the 1930s, and D.D. Kosambi who brought statistical analysis to the subject from the 1940s, way ahead of his time. Professor A.S. Altekar contributed much new thought to ancient Indian coinage in the 1950s and 1960s. Parmeshwari Lal Gupta built on the foundations laid by these workers with his own painstaking examination and publication of thousands of punchmarked coins, culminating in the Amaravati Catalogue (1963) of over 7000 coins from Andhra Pradesh.

The wheel has now turned nearly full circle. As the foundations laid by these early workers has become known outside India, the subject has regained worldwide recognition for its pivotal role in numismatics and history.

The punchmarked coinage of the Indian subcontinent thus fulfils two roles: it is firstly a fascinating and challenging series for collectors to assemble and identify. But studied in greater depth, it also plays a part in the historical record just at the time when the mists of prehistory were beginning to clear in the subcontinent.

## Geographic setting

The geographic position of the Indian subcontinent has played a determining role in the history of its peoples. Bounded by the ocean on three sides, it is unique in having an even more challenging border in the north where the highest mountain ranges in the world – the Himalayas – have at times filtered human contact to a trickle. This has acted as both an advantage and a disadvantage for its peoples. It shielded the population from invasion: virtually the only land routes in and out were via the steep river valleys to the west, through the mountains of present-day Afghanistan. But it also shielded them from contact with other peoples who might have benefitted from the growth of technology, forcing them to devise their own solutions to human problems. By good fortune their task was facilitated by the presence of fertile alluvial plains, extensive forests, and an abundant rainfall. The mountain filter has thus been an important factor in the development of the character of the peoples of the subcontinent, and indeed we see it in their earliest coinage.

Access to the subcontinent by sea (or at least by the coastal fringe) was probably the route taken by the earliest inhabitants of all, who came from the Middle East in the Palaeolithic age. The origins of the great Indus Valley (also called Harappan) civilisation are obscure, but the sea route was certainly used by early traders from the Mediterranean from the seventh century BC. This was the time when permanent settlement, farming, and the development of modern political systems were emerging. The first land invasion in historic time may have been by Cyrus the Great of Persia in the sixth century BC, and this was followed by Alexander the Great in the fourth century.

The oldest of the ancient oral traditions of India, the *Vedas,* describe a Bronze Age society where wealth was measured by the number of cattle owned. The raiding of neighbouring territories to steal cattle was common. Agriculture had arrived in the Indus Valley civilisations in Pakistan soon after 3000 BC, but it did not spread further. Elsewhere people may have retained a semi-nomadic lifestyle. The Indus and Harappan people came within a whisker of developing their own coinage - some of the preconditions necessary for coinage to be invented were certainly present, such as nucleated settlement and specialised occupations which would benefit from a currency medium for trade. They also had fixed weight systems. But their civilisation declined before the vital spark could ignite.

Such conditions did not develop again until the middle of the first millennium, this time in the central Gangetic plains, where agriculture based on irrigation and rice cultivation began in areas with specially favoured geographic and climatic conditions. Here, the sedentary lifestyle allowed nodal settlements gradually to increase in size - the first cities were emerging. As a prelude to the growth of specialised trading, the working of iron in the subcontinent had already begun as early as 1800/1500 BC (Tewari 2003), and the trade in the luxury Painted Grey Ware followed it. People would travel to a central place to obtain specialised items such as iron goods which they could not make themselves. In parallel a system of political control was evolving which would shackle these sedentary farmers to a dynasty or ruling aristocracy who, in return for offering certain protective rights, demanded a share of the agricultural wealth, or a tax in lieu. Cattle were not suitable for all these new activities, which required a medium divisible into small fractions to pay for small as well as large transactions. This was the moment for the introduction of a modern currency, which was fulfilled by manufacturing silver lumps of fixed weight, stamped with a guarantee by the issuing authority, which became the subcontinent's first coinage.

## Historical Outline of Magadha, *c.*600-321 BC.

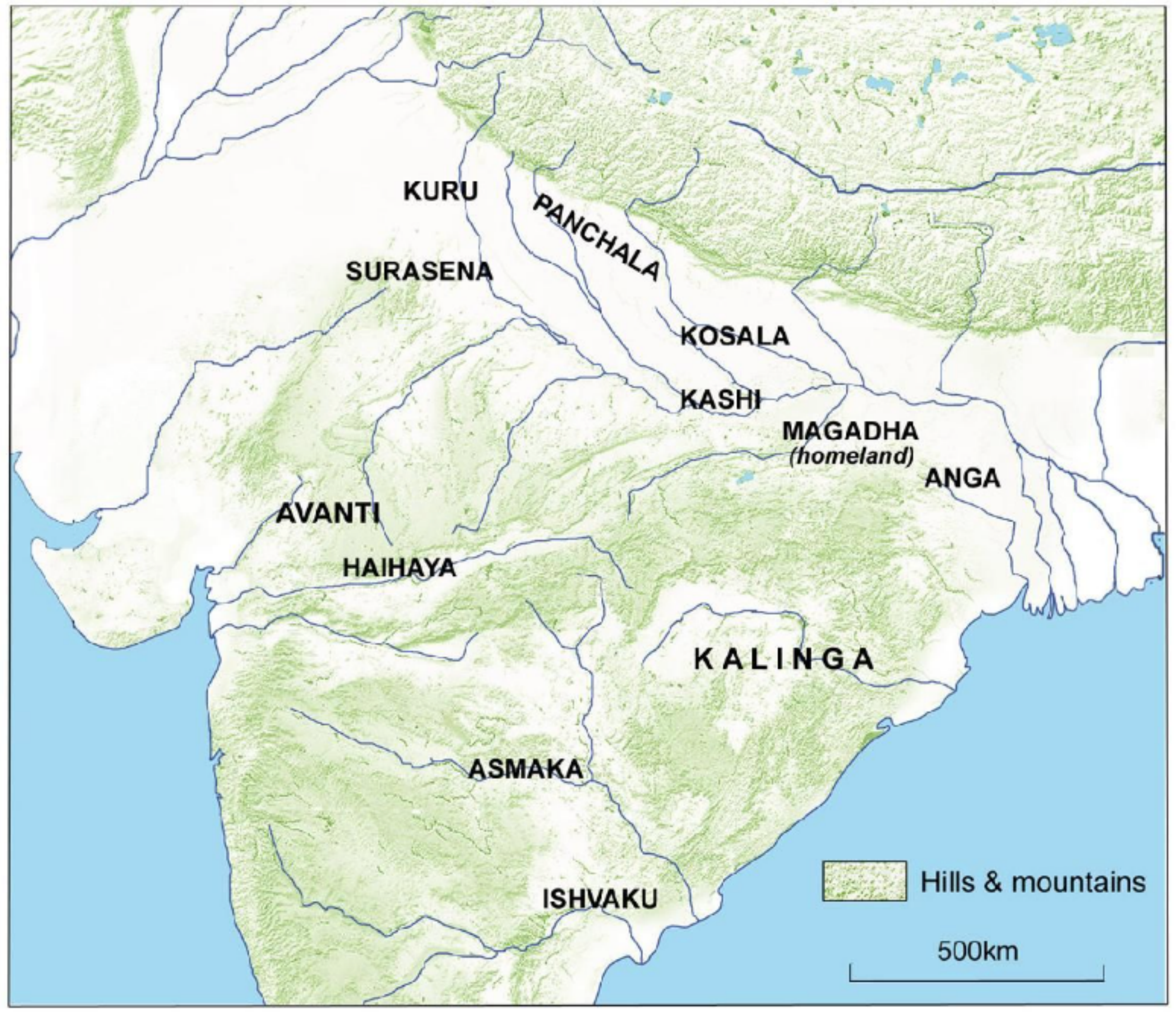
Magadha began as a monarchic state in the lower Ganga valley. In the seventh century BC it was one of many north Indian states, located near the end of the long overland trade route from the Mediterranean to India. It possessed two natural advantages - rich alluvial farmland capable of yielding two or even three grain crops a year, and access to iron and other minerals in the uplands to the south. To the north lay the foothills of the Himalayas, beyond which the mountains rise to the Tibetan Plateau. To the south lay the uplands of the Deccan Plateau, at this time probably still mainly forested and occupied by tribes still predominantly in the hunter-gatherer stage (Map 2).

The transformation of the Magadhan kingdom into a vast empire took over 150 years, from the early fifth to the mid fourth centuries BC. At the beginning of this period the political history of Magadha is uncertain. The ancient texts ('*Puranas*') mention the earliest king of any importance as Bimbisara. He began the expansion of Magadha with the conquest of the neighbouring state of Anga, but the most serious rival of Magadha at this time was the adjoining state of Kosala, located to the northwest in the middle of the Gangetic plains. It too had shown expansionist tendencies and had gained possession of Kashi in the sixth century. Bimbisara, perhaps anxious not to provoke open conflict, secured a marriage alliance with the royal family of Kosala. The goodwill was short-lived, for when Bimbisara's son Ajatasatru succeeded him (allegedly by murdering him), Kosala was annexed, and Kashi and Vaisali (near Pataliputra) were also absorbed. The exact dates of these events are not known, but by about 400 BC Magadha was the most powerful force in the Gangetic plains. The history of this time has added significance because this was the area where the Buddha lived and preached.

Ajatasatru was followed by a few rulers about whom there is no consensus in the *puranas,* after which came the Sisunaga dynasty. The progress of Magadhan conquest during this period is uncertain; the sources describe almost continuous political intrigue yet the conquests continued. The Sisunagas were followed by the Nanda dynasty, whose several kings continued the policy of conquest. The Nandas are reputed to have accumulated great wealth. This is corroborated from a sharp upward turn in the output of coinage by Magadha, indicating a growing economic strength. An increasing reliability of food supply freed many hands for crafts, trades and businesses requiring a greater volume of currency in circulation.

The important state of Avanti had perhaps already been conquered by the Sisunagas, but the Nandas consolidated their control over this area and were also supposed to have defeated the Ikshvakus, Panchalas, Kashis, Haihayas, Asmakas, Surasenas, Kurus and others (Map 1). The subjugation of Kalinga (modern Orissa) was accomplished, although here, Nanda control was not lasting. The Nandas thus extended their empire to most of the subcontinent north of the Vindhya Hills, except the northwest (modern Pakistan).

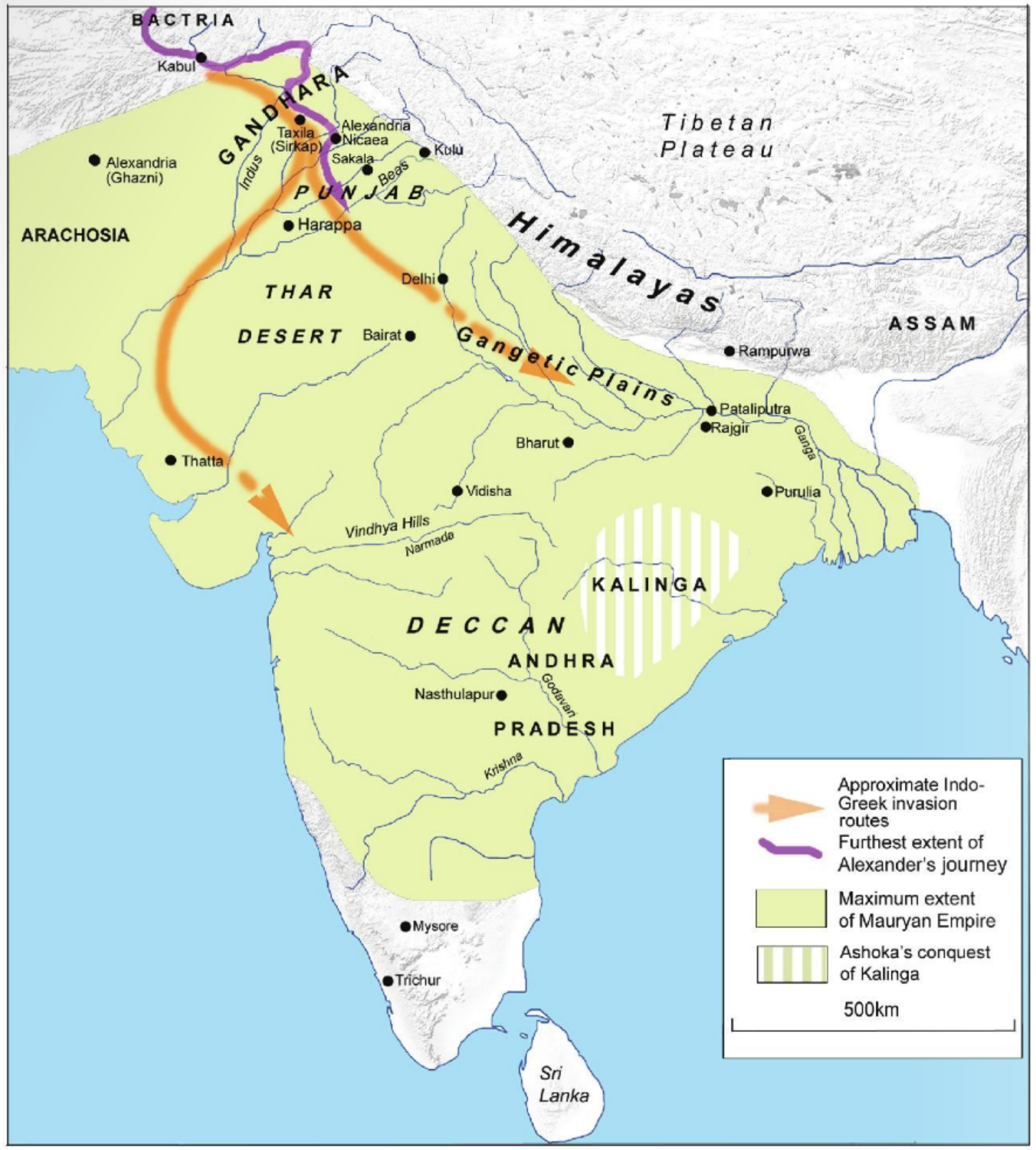
In 327/6 BC, only five years before the reign of the Nandas came to a close, the northwest of India was invaded by the Macedonian army under Alexander the Great. Alexander's military expedition, covering several thousand kilometres of forbidding country and reaching as far as the Beas river in the Punjab, is one of the most outstanding human achievements of all time, but it had no direct effect on the empire of Magadha whose western boundary Alexander never quite reached. Magadha's coinage remained uninfluenced by this invasion, but there was an unexpected side effect from Alexander's city-by-city conquest of the many small states of the Indus region: it paved the way for the rapid conquest of this area by the Mauryans, who quickly filled the power vacuum created by the retreat and death of Alexander.



Map 1: *Janapadas* of the pre-Imperial period

## Historical outline of the Mauryan Empire and immediate post-Mauryan period, *c.*321-150 BC

About 321 BC a man of humble origin named Chandragupta Maurya usurped the Nanda throne, thus establishing the Mauryan dynasty. He spent the next few years consolidating his control over northern India. He made a treaty with the Seleucid Greeks, taking command of much of the territory formerly claimed by Alexander, including the region of Arachosia in present-day Afghanistan. The chief minister of Chandragupta and of his successor was named Chanakya, *alias* Kautilya. He is traditionally held responsible for producing a comprehensive guide to statecraft called the *Arthashastra*, which is by far the richest source of present day knowledge of the political and social conditions in the period. However the Mauryan date of the *Arthashastra* has been called into question. Mabbett (1964) suggested it was written down as late as the second or third centuries AD, but he admitted much of the content could have been derived from Mauryan time. The attention to detail seen in the *Arthashastra* strongly suggests it was composed under a tight political administration and perhaps only the Mauryan period fits this mould.



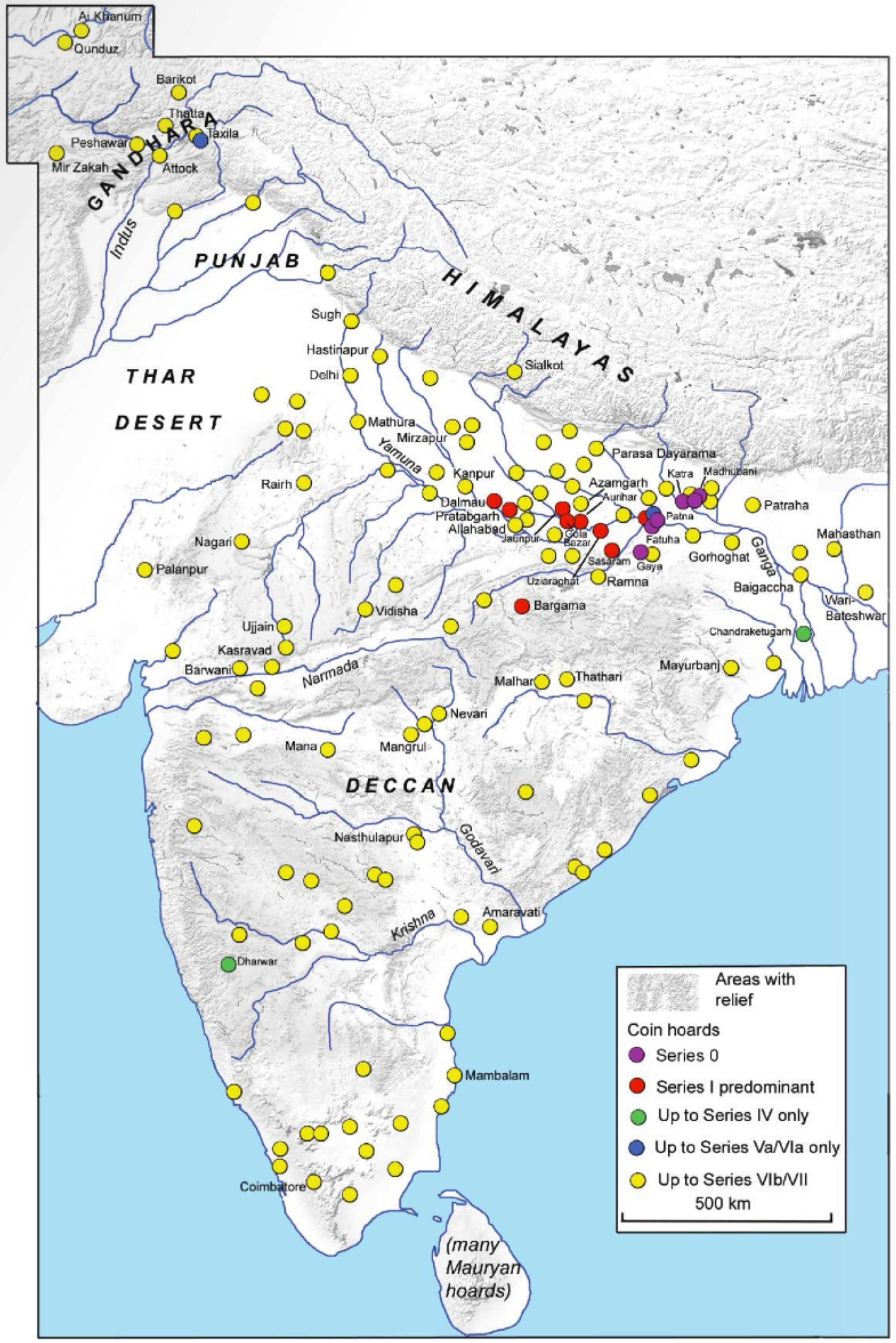
Map 2: General map with names mentioned in the text

The immense volume of Mauryan coinage was necessary not only to pay a large standing army and a great number of civil servants, but also to facilitate the further growth of trade. Artisans were organised into guilds (*Sreni*) and their products had to be paid for in cash. Articles were not allowed to be traded at source; the trader was forced to add value to his product by further manufacture and/or transportation. The remarkable homogeneity of coin types from hoards throughout the country (Map 3) is testimony to the long-term mixing of the currency that occurred in the Mauryan period, which no doubt reflects a flourishing trading process that reached every corner of the empire. The circulation of money was not confined to the towns, as the farmer was allowed to trade his own food surplus, and to pay his taxes in cash. This homogeneity of *karshapana* coinage and the strict control which successive generations of government maintained over it may provide an antidote to the arguments of some historians that the vast extent of the Mauryan Empire could not have allowed more than nominal centralisation (Thapar 1998, 131). Yet there may be some truth in this assertion - cracks in the system are evident from certain aspects of the coins themselves (see under 'Bold Reverse Marks' page 37).

The *Arthashastra* gives some indication of the value of the *karshapana* in terms of fixed incomes (presumably annual) of different social groups. The lowest paid labourer, barely more than a slave, received 60 pieces of silver; he may also have received board and lodging free. At the other end of the scale, the chief priest, commander of the army and others each received 48,000 pieces of silver. The contrast between rich and poor was evidently well developed at this stage. The earliest debasement of coinage is said to have been carried out by Kautilya himself, although the coins themselves remain of high silver content until the very end of the *karshapana* issues.

Whereas Chandragupta had strengthened the northern frontiers, his son Bindusara (*c.*297-272 BC) campaigned in the Deccan and pushed Mauryan control as far south as Mysore. When his son Asoka followed him, only the far south and the state of Kalinga remained independent in the subcontinent. Asoka took it with much bloodshed in the eighth year of his reign, but this marked a turning point in Mauryan military policy. Thereafter he resolved to cease conquest by violence, perhaps a wise move considering the vastness of the empire already in his hands. Asoka erected a series of rock and pillar edicts throughout Mauyran territory, expounding his principles of government, ethics and religion, as he wished them to be known to future generations. They show an element of humanity entirely lacking in the grim *Arthashastra.* Though converted to Buddhism, Asoka did not condemn other religions. Where predecessors had travelled in conquest, Asoka finally resolved to visit his subjects in friendship, undertaking lengthy and arduous tours. Indian history in written form begins with Kautilya and Asoka and this sudden wealth of information has enabled much to be written on the Mauryan period.

Asoka died about 232 BC to be followed by some half dozen other inconsequential Mauryans. The decline of Mauryan influence probably began at this time, but the historical record again becomes fragmentary, and there are only vague indications of the progress of disintegration which resulted from the weakening of central authority. Numismatics makes an important contribution at this time; the appearance of small independent states is corroborated by the termination of silver *karshapana* coinage and appearance of local base metal imitations (Series VIII in the Catalogue). In parallel, local copper coins of cast or diestruck form from the late third or early second centuries BC provide further evidence for the many groups breaking away from Mauryan control.


Ai Khanum
Qunduz
Barikot
Thatta
Taxila
Peshawar
Mir Zakah
Attock
GANDHARA
Indus
PUNJAB
HIMALAYAS
Sugh
Hastinapur
Delhi
Sialkot
THAR
DESERT
Mathura
Mirzapur
Yamuna
Kanpur
Parasa Dayarama
Azamgarh
Katra
Madhubani
Patraha
Rairh
Dalmau
Pratabgarh
Allahabad
Jaunpur
Aurihar
Gola Bazar
Patna
Fatuha
Sasaram
Gaya
Gorhoghat
Mahasthan
Ganga
Nagari
Palanpur
Uzirarghat
Ramna
Baigaccha
Bargama
Wari-Bateshwar
Vidisha
Chandraketugarh
Ujjain
Kasravad
Barwani
Narmada
Malhar
Thathari
Mayurbanj
Nevari
Mana
Mangrul
DECCAN
Nasthulapur
Godavari
Krishna
Amaravati
Dharwar
Mambalam
Coimbatore
(many Mauryan hoards)
Areas with relief
Coin hoards
● Series 0
● Series I predominant
● Up to Series IV only
● Up to Series Va/VIa only
● Up to Series VIb/VII
500 km

Map 3: Hoard findspots (see also map 5). Large hoards are named.
See Appendix 9 for sources

The Mauryans were succeeded by the Sunga dynasty about 184 BC. Their first emperor, Pushyamitra, seems to have been a person of some force, but his sphere of influence was probably restricted to an area between the Indus and the Ganga delta. From shortly after 200 BC the northwest was threatened and then occupied by a new wave of peoples with Greek names and culture, the so-called Indo-Greeks (Indo-Bactrians). They were descendants of the same peoples who had been partially Hellenised after Alexander had established 'Greek' city states in modern Afghanistan and as far east as Alexandria Nicaea, east of Taxila, in Gandhara. They were led by Demetrius I (*c.*200-180BC). His successors Eucratides and Menander are reputed to have advanced as far as Pataliputra by the mid-second century BC before they were forced to retreat. The coin portraits of some of the Indo-Greek rulers (Fig. 17) leave us in little doubt about their powerful personalities. The effect of this territorial loss on the Mauryan rulers, already weakened by the lack of any successor of the calibre of Asoka, was certainly catastrophic in terms of their economy, as is clear from the sudden and dramatic changes seen in their coinage, which rapidly lost its silver content. In the south too, independent dynasties sprang up in Kalinga and Andhra. The struggle for the Gangetic plains was fiercely contested, and about the middle of the second century BC, around the time of Pushyamitra's death, the Sungas were forced to abandon their capital at Pataliputra and seek refuge in the Vindhya hills. Here the Sungas survived, though stripped of most of their empire, until the end of their line in the first century BC.

### In this section

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*The karshapana*

*Classification of the coins*

*Bankers marks*

*Hoards*

*Chronology & dating*

*Punchmarked iconography*

*Numismatic references in the Arthasastra*

*Debasement and termination of karshapana coinage*

*Mint errors*

*Forgeries*

# SECTION 2

# The Punchmarked Coinage of the Magadha-Mauryan period

## General introduction

The punchmarked silver coinages struck in the subcontinent for several hundred years up to the mid-second century BC were in their time perhaps even more plentiful than the Roman denarius, judging from the numbers seen today. Though common in India, these coins were little-known elsewhere until the emergence of the academic studies and catalogues of the mid-twentieth century.

More than any other coinage from any other period, punchmarked coins represent a personal statement by those who fashioned them, because they embody not just a pair of dies but five or six different 'dies' or punches, plus in many cases numerous other bankers marks. The subject matter of the official marks may have been dictated by the political authority of the time but the punches were cut by individuals who exercised their personal skills in interpreting the instructions given to them. We watch them hone these skills in the miniaturisation of complex subjects such as animals or birds which have to be generalised into a space of only a few millimetres. Some remarkable results turn up, worthy of a place in the highest ranks of late prehistoric art. Additionally, if our interpretation is correct, the bankers marks were personal designs thought up and executed without any directive from authority.

There were two main groups of silver punchmarked coinage in ancient India. The earliest was produced locally by small states (*janapadas*) before the rise of the empire of Magadha. These are variable in style, weight and fabric, often using symbols of purely geometric design, but with some remarkably florid animate creations as well. Magadha, one of the largest of these states, was one of the first to issue punchmarked coins, probably while its capital was at Rajgir. These issues are included in the present Catalogue as 'Series 0' (Fig. 1a). The Magadhan capital was later moved to Pataliputra (modern Patna) and from here Magadha pioneered the development of a new coinage which was, as it appears from the *Atthakatha*, of lower weight than the Rajgir coinage. These coins were known as *pana* in earlier literature but as *karshapana* later, and this is the name by which they are generally known today. They form the main subject matter of this Catalogue, and their format continued with only minor modification under the succeeding Mauryan Empire. Nearly all these coins are held together by a common bond – the presence of a sun and six-armed symbol, which are thought to be the particular 'badges' of the state of Magadha and its Mauryan successor. Excluding post-Mauryan degraded copies, there is only one *janapada* issue of coins so far known in fine silver that also contains these two symbols, a rare silver half-*karshapana* denomination from the Bangladesh region (Bose 2010, 2011) that perhaps had some kind of loose alliance with Magadha in pre-Imperial time (Types 264/7a -264/16a pages 139-140).

The many varieties of coin types provide evidence for an intricate bureaucratic and fiscal system. We can watch this system increasing in complexity as coinage becomes more widely used in the Gangetic plains. It is tangible corroboration for the bureaucratic government described in the *Arthashastra*. Whatever the date of the *Arthashastra* itself, the roots of this increase in social and political complexity lie much earlier than the Mauryan period.

During circulation, punchmarked coins were frequently countermarked with small punches which are termed 'bankers marks'. The abundance of them on early punchmarked coinages sometimes renders identification difficult, and care is needed to distinguish official from bankers marks, or even in distinguishing obverse and reverse when the latter is crowded with them.

## The *karshapana*

The Magadhan silver *karshapana* (Series I to VII) bore five official punchmarks and weighed approximately 3.4 grams (Fig. 1b). The complex geometric designs of the early coinages were replaced with simpler motifs including more representations of real objects. When the Nanda and Mauryan empires grew to dominate much of the

Indian subcontinent, the *karshapana* coinage came to circulate throughout their territories and beyond, driving out the old coins of the local states, and remaining in use even into the second and third centuries AD, long after its issue had ceased. The *karshapana* is by far the commonest kind of punchmarked coin found today. On *karshapanas,* the five punchmarks are placed more or less randomly on the flan, often falling partly off the edge, and on larger coins there is some attempt to avoid overlapping. On all coins except Series VII, the first two marks comprise a six-armed symbol and a sun. Apart from some early coins on which the sun has oblique rays, the sun is very nearly constant throughout the *karshapana* series. In contrast, the six-armed symbol has over 100 varieties. The third, fourth and fifth marks, which are termed class, group and variety marks in this work, also vary. The frequency with which they do so is the main criterion in determining which is third, fourth or fifth. Thus the third may remain constant while the fourth varies, or the fourth may remain constant while the fifth varies. Sometimes only one fourth mark is known to occur with a particular third, in which case our designation 'third' and 'fourth' is based on similar marks that have a clear place, or if none such exists, the designation is arbitrary.

The *karshapana* coinage has continued to yield new varieties. When the British Museum Catalogue of Ancient Indian Coins was published in 1936, only 115 varieties were represented, taking into account the many errors resulting in duplication and non-existent types. At this time it was thought they showed no sign of evolution. The first edition of this catalogue listed 613 varieties. The second edition lists 936 varieties to the end of Series VII plus a further 53 in Series VIII and 42 types that are too unclear to include in the main Catalogue.

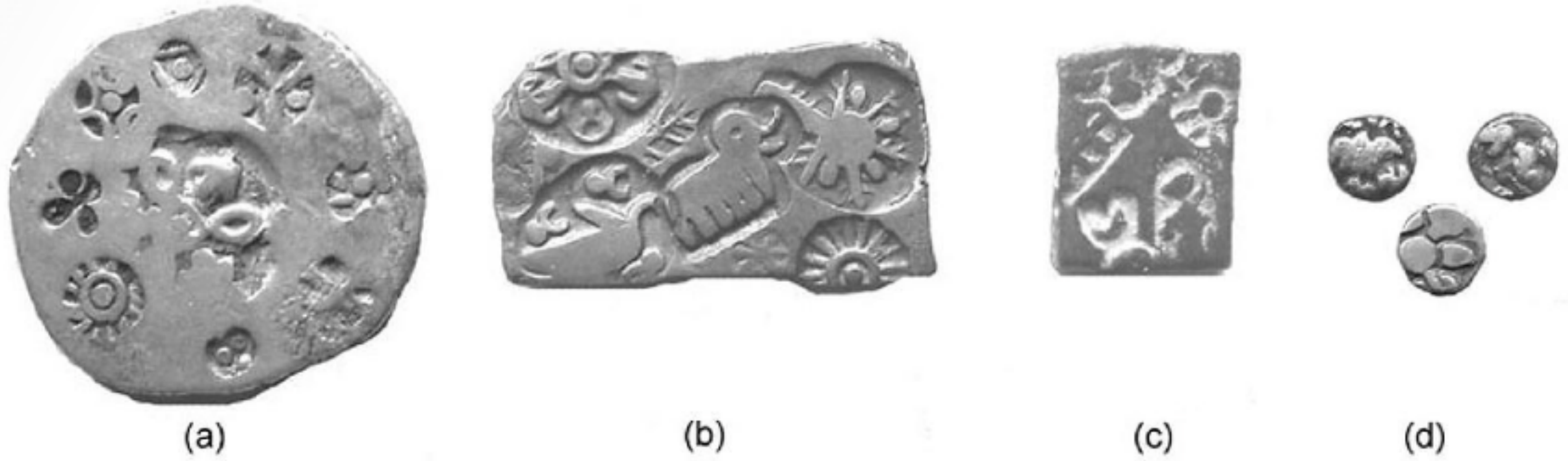


Fig. 1: Basic groups of punchmarked coin: (a) Pre-*karshapana* (Series 0), (b) *karshapana* (Series III), (c) post-Mauryan (Series VIII) and (d) *mashaka* fractional coins x2.

## Fractional coinage

Throughout most of the punchmarked coinage period, various *janapadas* made brief issues of fractional denominations of their main weight systems. In the very earliest Magadhan coinage, and again in the Mauryan period, fractional coins accompanied the normal weight denomination. Although they are neither truly punchmarked (in the sense of being stamped with multiple punches) nor *karshapanas*, these small unifacial coins bear Magadhan and Mauryan symbols from a single punch on circular flans weighing between 0.02 and 0.3 grams (Fig. 1d). They are termed *mashakas* and are found chiefly in the northwest and in the central zone of the Vindhya hills. A definitive catalogue (Hardaker 1999) lists 98 types, but the series degenerates into base silver and copper, and many of the coins are so small and corroded it is almost impossible to make out their types. It is suggested that in the Mauryan period this fractional coinage was reintroduced by Chandragupta Maurya perhaps to enable the payment of taxes by the growing middle classes (Hardaker 1999, 10).

## Classification of the coins: Summary

The classification adopted in this work is primarily generic, i.e. it groups together coins with like symbols. Each coin type is given a unique sequential number (now extending from 01 to 649) which has come to be adopted as the terminology used by collectors and students. Each type also has a generic description by Series (e.g. I, II etc.), Class (beginning with I within each Series), Group (beginning with A within each Class) and Variety (beginning with 1 within each Group). Each symbol is also given a number (listed in Appendix 2) and these numbers are identical to those designating the fifth mark in the Catalogue. For example the number used for 'elephant right' is 1, so wherever the generic classification ends in 1 the fifth mark is an elephant. Where new varieties have been added since the First Edition they take up the sequential number of the group or class they belong to, but with the appendage a, b etc. It is thus easy from glancing at the Catalogue to see the new varieties added. At the same time the original sequential classification is left undisturbed. Occasionally a new variety embodies not a different fifth symbol but a variant six-armed symbol. Then the generic classification ends in * not 'a', to distinguish it.

This classification seems, from other evidence, also to have broad chronological cohesion, but with some exceptions (as discussed in detail under the Introductions to the Series in Section 3).

The mix of evidence used to set the coins in a chronological sequence includes style, size, which marks are used, extra marks, debasement, grouping of class marks with a common theme, presence or absence of the sun and six-armed symbol, the restruck coins, and the evidence of hoards. The basic classification into nine 'Series' has its origins in the six 'Periods' devised by Gupta for the Amaravati Hoard (Gupta 1963), but is now expanded to include pre-*karshapana* and post-Mauryan issues. Detailed characteristics of each Series are described in the Catalogue section. In addition there is a list of 'Wayward coins' embracing types that from their style and content appear to be ancient forgeries. This list also illustrates modern forgeries that have regrettably entered the market in recent years. The main features of the nine Series are as follows:

### **SERIES 0** 29 types

The initial issues of the early Magadha homeland, bearing the six-armed symbol but on higher weight standards than the *karshapana,* and with between one and four official marks. These coins were almost unknown until the 1970s and are still rare today.

### **SERIES I** 505 types

The first issue of *karshapanas,* initially with only four marks but quickly incorporating a fifth. These coins are often on large flans (over 22mm). There are more types in Series I than in any other, but most types are uncommon, although increasing numbers have come on to the market in recent years. Series I coins are not usually mixed with later Series in hoards. The Series includes three interlinked phases of restriking, described in detail in the Introduction to Series I in the Catalogue section.

### **VASSAL STATE(S) contemporary with Series I** 13 types

Half-*karshapanas* of *janapada* style but with six-armed symbol and sun marks that appear to be hybrids between *janapada* and Magadhan coins.

### **SERIES I/II** 9 types

A set of variants of Type 279 displaying characteristics with affinities to both Series I and Series II, placing them at the transition point between the two Series.

### **SERIES II** 30 types

A small group, having only three varieties of fifth mark. Typically restruck by Series III and IVa, and seldom not restruck. These restruck coins continued to circulate into Mauryan time.

### **SERIES III** 59 types

Linked by common class and group marks, these types are seen struck on fresh flans as well as being the types overstriking Series II.

### **SERIES IV** 167 types

A large Series divided into four sub-classes, the earliest of which also restrikes on Series II coins. A defining feature is often some form of arches arranged in pyramid form with other attributes on top of the pyramid. Much or all of this Series was probably issued in the mid-fourth century BC.

### **SERIES V** 57 types

Probably the first issue of the Mauryan dynasty from *c.*321 BC, this Series is tentatively divided into two sub-classes, the first, chronologically earlier, is without additional Bold marks on the reverse, the second has these marks. Class marks on this series vary and seldom contain the arches theme.

### **SERIES VI** 64 types

Coins of small or very small size (11-18 mm), with arches-and-crescent exclusively as class mark. As in Series V, the coins are subdivided into VIa with lack of Bold reverse marks and VIb with them. Series VI coins are often found very worn in hoards deposited long after their issue. Such hoards also contain Series V coins but few earlier types. Worn examples of Series V and VI are therefore abundant, but really fine specimens with clear symbols on larger flans are difficult to find.

### **SERIES VII** 16 types

A small series of coins clearly distinguished by the lack of the sun and six-armed symbol which are replaced by other marks. Their small size, Bold reverse marks and symbol links indicate a contemporaneity with Series VIb. An interesting feature is the use of a group of three human figures on some of the types.

### **SERIES VIII** 53 types

The coinages of post-Imperial time that retain sufficient of the *karshapana* elements to be classed as punchmarked coins, by way of symbology, punchmarking technique, size or weight. This section is newly introduced to give guidance in the identification of punchmarked coins which might be perceived as part of the main *karshapana* series.

A summary of the main characteristics of all the Series is shown in Table 1.

## Bankers Marks: Overview

Bankers marks occur throughout all silver punchmarked coinages in the subcontinent, covering a period of almost 250 years, from the very earliest *janapada* issues, including the bent bar coins of the northwest, until early in Series V in the Imperial series. A similar custom of adding 'schroff marks' prevailed in India up until a few decades ago, and was in use in other parts of the world including the Far East in the eighteenth and nineteenth centuries. The purpose of such marks was to verify authenticity. The generally accepted interpretation is that if a countermarked coin was suspect, it could be returned to the merchant who had stamped it for redemption. For example in the Philippines, countermarks only begin to appear on silver coins after 1772, when the high grade (916.66 fine silver) Dos Mundos coinage was replaced with lesser grade money, giving rise to a wave of doubt amongst the public. The question arises whether the bankers marks of ancient time fulfilled the same function.

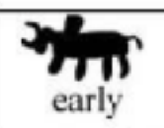
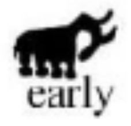
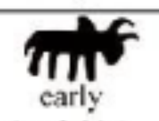
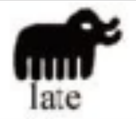
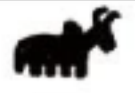
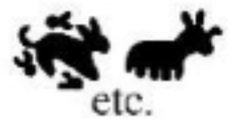
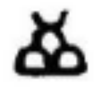
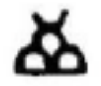
| Series | Coin Size mm | Extra Marks | Sun's Rays | Elephant Style | Bull Style | Double Obvs. | Metal | Class Marks |
|---|---|---|---|---|---|---|---|---|
| 0 | 22-28 | Bankers often large | Radial | None |  early | None | Fine | None |
| I | 22-35 | Bankers often large | Oblique |  early |  early (variable) | Few | Fine | Variable |
| II | 19-28 | Small bankers | Radial/ oblique |  late | Early | Nearly always | Fine | Variable |
| III | 18-26 | Small bankers | Radial | Late |  late | Often | Fine |  etc. |
| IV a | 18-24 | Small bankers | Radial | Late | Late | Often | Fine | Including 'arches' |
| IVb | 18-24 | Small bankers | Radial | Late | Late | None | Fine | Variable |
| IVc | 18-24 | Small bankers | Radial | Late | Late | None | Fine | Variable No arches |
| IVd | 16-22 | Small bankers + miniature | Radial | Late | Late | None | Fine | Including 'arches' |
| Va | 12-18 | Fewer bankers + miniature | Radial | Late | Late | None | Mostly fine | Variable |
| VIa | 11-16 | Fewer bankers + miniature | Radial | Late | Late | None | Mostly fine |  |
| Vb | 11-16 | Bold | Radial | Late | Late | None | Mostly fine | Variable |
| VIb | 10-18 | Bold | Radial | Late | Late | None | Some debased |  |
| VII | 11-16 | Bold | None | Late | Late | None | Some debased | None |
| VIII | 6-16 | None | Radial | Late | Late | None | Copper/alloy | Variable |

Table 1: Principal characteristics of *karshapanas.*

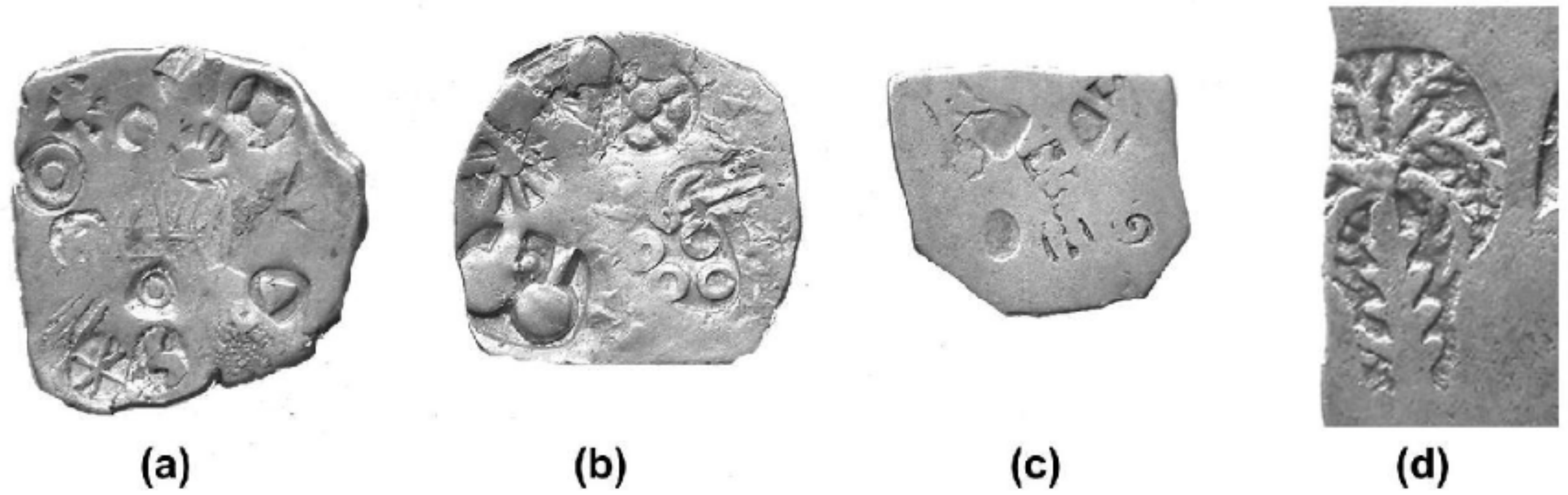


Fig. 2: Examples of bankers marks: (a) Mixed size bankers marks on coins of Series 0, (b) large size on Series I, (c) normal size on Series IVa, (d) delicately styled bankers mark of a palm tree on a Series IVa coin, imitating official mark from Series III (a-c x1.5, d x3).

The universality and randomness of bankers marks indicates they are not part of the official design but are added to coins while in circulation. The variations seen in these marks have a significant contribution to make in the analysis of punchmarked coins (Fig. 2).

The use of the term 'bankers marks' (strictly bankers' marks) is widespread, and they have been discussed since the 1930s (Prasad 1934, Bhattacharyya 1940), yet exactly who placed these marks on the coins has remained largely unanswered. The point of departure in addressing this problem is to recognise bankers marks did not just happen: something was perceived as inadequate in the coinage as issued by the official mint to prompt their introduction.

'Bankers marks' is not a particularly appropriate term bearing in mind that banks as known today did not exist in ancient India. But since the origins of trade in Europe and Asia during the Neolithic period in the fourth millennium BC, the need for specialised materials available only from localised source areas had prompted long-distance carriage between source and market. For example, polished jade stone axes found their way to Britain from rock only found in the Italian Alps. It would not be a large step from trade by exchange of goods to the idea of a loan, but without money this could only be conducted in a cumbersome way using some kind of surety such as a forfeit, promise or sacrifice. As soon as money was invented, lending, with usury, became widespread, and the ancient equivalent of the 'banker' was born.

Bankers marks were clearly placed on coins by people whose work was in some way connected to finance, yet it is hard to see what part they might have played in moneylending. Kosambi (1941-2) carried out a statistical study of the bankers marks on two major Mauryan hoards from Taxila and quantified what can almost be seen by eye from most hoards: the number increased as the weight of the coins decreased. Clearly then, these marks were added progressively to coins in circulation. His conclusion that bankers marks were added once every twelve years, however, has since been discounted as more detailed evidence has emerged.

Below it is argued that two conditions emerged shortly after the introduction of coinage to render it imperfect for the job it was intended to do: the proliferation of a cascade of different weight systems, and the appearance of counterfeit coin.

The sheer number of bankers marks is an inhibiting factor in their analysis. The first person to attempt an illustrated listing was Murphy (Murphy 2001, 57-64), whose chart includes more than 600 varieties, yet this is but a small proportion of the total. The bankers marks differ from the official marks in ways which make it clear that the former were not the work of the mint. The official marks are always constant in number (five on the regular *karshapana*), from punches of regular, quite large size, employing motifs which often have a limited timespan. On the other hand, the bankers marks on coins vary in number from none to over 30 on a single coin, are of variable size, and employ motifs more randomly over time. Some light has been thrown on the purpose of this task from a highly unusual hoard of coins from the state of Kashi/Kosala (Hardaker 2012).

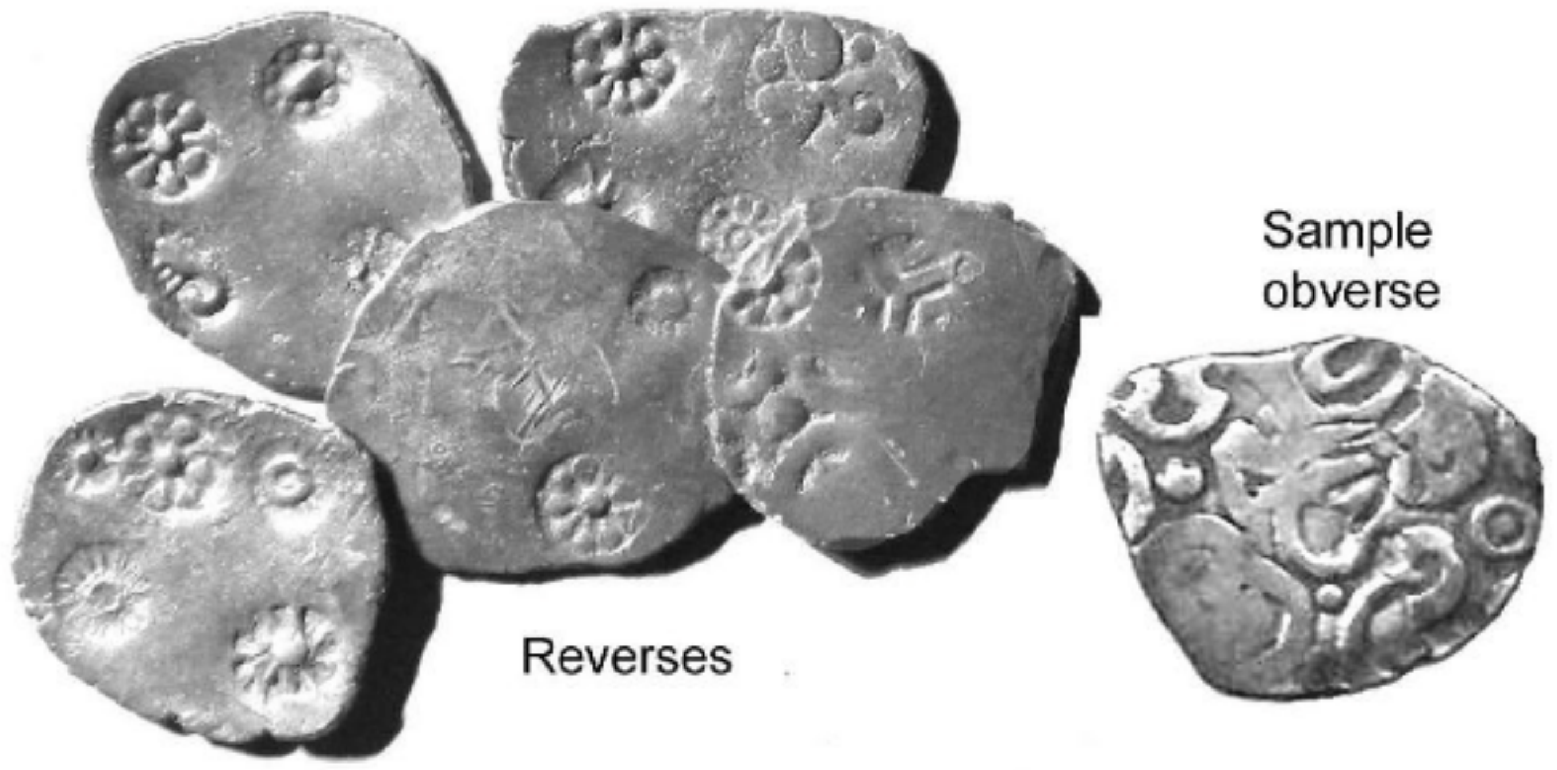


Fig. 3: Examples of coins from the Kashi/Kosala hoard with 'flower petal' mark repeated on all coins. x 1.5.

This hoard comprised 67 coins of only two types, all of which were stamped with the same bankers mark on the reverse (Fig. 3). Other bankers marks also occurred, but they were mostly seen only once. All the coins in this 'banker's cache' were marked using the same punch, but then the coins were not dispersed. They were circulating at a time when several different weight standards were concurrent, yet the coins that were stamped all belong to a single weight system, as though to signify they were within tolerance of this particular weight. If any coin turned up again, the banker would know their weight was acceptable without having to stamp them again. It was easier to identify the coins from the bankers mark than from the complicated official designs. This interpretation is corroborated from several other examples of recurrent bankers marks seen exclusively on coins of similar weight, notably 115 early pieces from Vatsa *janapada*, which were all stamped with the same bankers mark even though they were of many different types (author collection, unpublished).

Classical coinage too has its share of countermarks, but they had a different purpose from bankers marks. The Classical world shows only sporadic use of marks similar to those used on punchmarked coins, although they are sometimes seen on Persian coins. The bankers mark custom would appear to have originated in India independently.

Insight into other aspects of life in sixth century BC Magadha is also provided by the bankers marks. Artisans who made the punches for bankers marks, who presumably would not have ranked very high in the hierarchy of society, clearly had access to the appropriate metals for their punches. These metals had traditionally been scarce in Bronze and Iron Age society: metal objects were reserved for the wealthy or the military. The evidence from punchmarked coins suggests these resources were becoming available to the Guilds of specialised manufacturers for the more mundane purposes of punch-making. The countless numbers of marks testify to the number of people who performed this function. If iron or bronze were available for bankers mark punches, these materials were probably becoming available for many other purposes in society; they were no longer just reserved for the wealthy. In parallel we can watch the growth of a tradition of punch manufacture and engraving, from very crude, unpractised beginnings (e.g. on the *Narhan* coins which are regarded as some of the earliest punchmarked coins, see Fig. 7a, page 34) to competent, fluent work with occasional flairs of exceptional talent. It is a microcosm of variable human skill levels just as in today's world.

Some of the practical problems of Magadha-Mauryan coinage, and the different ways these were addressed, manifest themselves in the different added marks seen over time.

In the subcontinent, the defacing of coins with bankers marks was as old as coinage itself. In some coins of Series 0 and early Series I, it is difficult to tell the difference between official and bankers marks (see for example Fig. 7b). The earliest *karshapana* coins of Series I had only four official marks, continuing the tradition of later Series 0 coins. Early in Series I however several varieties of a fifth mark appear, which are not random but recur on multiple examples and are almost certainly a part of the official type. We see a transition from doubtful 'fifth' marks – perhaps tentative attempts at an official fifth mark – to easily-recognised official ones. The earliest 'official' fifth marks seem designed to look like bankers marks (see for example on Types 10, 11, 12). But by the next issue (e.g. types 22, 23, 25) they are beginning to take the form of marks which later become standard. Clearly, bankers marks were not an integral part of the official coinage; it seems they were also frowned upon by government, and this was the first attempt to halt their addition by adding a new fifth mark as an official substitute. If it was, it failed, as the practice of adding bankers marks continued unabated.

Defacing the coinage was not always the work of the merchant class. On several occasions, in Series I, and again in Series III, the coinage, or a selected part of it, was restruck with five new marks on the original reverse, producing two sets of official marks on these coins (the so-called 'double obverse' coins). This 'numismatic vandalism' was carried out by the mint authorities themselves, and for a long time afterwards there were no further discernible measures to counteract bankers marks. The policy to keep the money in a clear and legible condition had been overridden by an own goal on the part of the authorities.

Below (under Chronology and Dating page 27) the bankers marks and the various other added marks are examined in more detail to see how subtle changes in them can provide clues to the relative chronology of the coinage.

## Hoards: Overview (Maps 3 and 5)

Comparison of the content of different hoards has only brought fruitful results for a small proportion of the hundreds of hoards unearthed in the past 200 years. Hoard potential for providing valuable historical information is curtailed for several reasons. When a hoard comes on to the market the findspot is seldom recorded, or if it is given, it may be deliberately misleading or vague, to safeguard dealer sources. Hoards are seldom reported to the Department of Antiquities. The contents of hoards often become mixed, and by the time they come to the attention of scholars it is uncertain which coins belong to the genuine hoard group. Finally, hoards recovered from archaeological sites are often inadequately described and the stratigraphic context is sometimes vague.

Most hoards of any size contain a very broad range of types, resulting from a thorough mixing during circulation. This restricts the retrieval of chronological or geographic information. The most thorough study of hoard content is contained within P.L. Gupta's Catalogue of the Amaravati Hoard of Punchmarked Coins (Gupta 1963), which has been fully used in determining the chronology of Series II to VII.

The distribution of silver punchmarked hoards from Series 0 to VII with reliable provenance is shown in Map 3. It is based on Gupta's data plus information from more recent hoards (a full list of the sources for this map is given in Appendix 9). A more detailed map of Series 0 and I hoards is shown in Map 5 in Section 3. Very few hoards terminate before Series VIb-VII, and of those that do, even fewer have a provenance - insufficient to offer any geographic comment on the spread of the Magadhan-Mauryan conquests, as Map 3 shows. (This topic is discussed in more detail in the Introduction to Series I page 92).

The distribution map shows some interesting gaps, particularly in the vast region between the Deccan and the Northern Punjab. The arid zone of the Thar Desert in Rajasthan would have been sparsely populated in the past, but the Punjab, at least today, is a densely populated area. Here, in some of the doab regions (spaces between parallel-flowing rivers), 2000 years of seasonal river silting has buried the archaeological layers below the reach of the plough. The variable and unreliable rainfall regime of the Indus catchment may have been less suitable for primitive agriculture in the past. But when this empty space is viewed in the context of the other features on the map, an intelligible pattern emerges. Finds are densest in the Gangetic basin where farming (and therefore population) could be most efficiently deployed. The plateau lands and hills of the Deccan are sparser, reflecting a less dense, or less advanced, population. The scatters are perhaps slightly more dense in the river valleys and along the east coast. The west coast shows a notable absence of finds, not easily explained, especially as the Graeco-Roman trade with India is assumed to have docked on this side of the peninsula. South India has plenty of punchmarked finds, but these coins are often very worn and it is suspected that their circulation continued long after the end of the Mauryan period. Finds from Sri Lanka (not plotted on the map) are also abundant but usually worn and thought to have come there at a later date by way of trade as in South India. The high Himalayas, as might be expected, are virtually devoid of finds. One remarkable exception to the lack of finds in mountainous places is the Gandharan region, which despite the high relief and an inclement climate contains a significant number of punchmarked hoards, extending far into present-day Afghanistan. The occurrence of economic activity in this apparently inhospitable region no doubt reflects an overland trade route stemming from the energies of Cyrus and Alexander, whose conquests and subsequent reorganisation of the political map here brought in their wake settlers and traders from the west. The presence of findspots in these uplands far away from the fertile plains of the Gangetic zone may therefore not reflect Gandhara's inclusion within Mauryan polity, but rather the arrival of the *karshapana* as a consequence of it lying along this trade route. Tellingly there are no finds of Classical coins further east in the Magadha region.

The date of deposition of most hoards towards the termination of the issue of silver *karshapana* coinage suggests that during most of the period of Magadhan-Mauryan rule, civil strife did not prompt people to bury their savings. In contrast, at the end of this period there is an upsurge in burials: times were more uncertain. This certainly corroborates the other numismatic and historical evidence for political and economic turmoil following the demise of Mauryan rule, and the invasion of the Punjab by Indo-Greek peoples from the northwest, during the second century BC.

Despite the lack of burials during the period from Series II to late Series VI, there is nevertheless a large difference in the proportions of different types in certain late hoards. This topic, and the role of hoard evidence in the relative dating of punchmarked coins, is considered in the following sections.

## The Chronology and Dating of Punchmarked Coins

There are two separate aspects to the dating of punchmarked coins – relative chronology and absolute dating. The former is somewhat easier than the latter.

### Relative Chronology

The techniques which can be used in discerning the relative chronological arrangement of punchmarked coins are: (1) the study of hoard evidence, (2) weight ranges in hoards, (3) fabric including flan size and manufacturing methods, (4) weight systems, (5) bankers marks and their successors, (6) metallic composition and (7) restruck coins.

The application of these techniques to individual Series is examined in the Series introductions in Section 3; general techniques are considered here.

#### 1 Hoard evidence (Maps 3 & 5)

The most useful tool for establishing chronology is the comparison of the typological content and relative proportions of each in different hoards. Below some key hoards both old and new are considered.

#### (a) The Amaravati hoard (Gupta 1963)

'Amaravati' is the largest hoard ever studied in detail, comprising 7668 coins of 235 varieties found in an earthen pot in the small town of Amaravati in Andhra Pradesh in 1953.

The basic chronology of the *karshapana* was originally worked out by Gupta from this hoard (Gupta 1963, 144-149) from an extensive comparative study of hoards; this remains the most thorough analysis. For each type in the hoard, Gupta detailed the other hoards in which it had been found. From the catalogue it is thus possible to reconstruct the content of about 35 other hoards which the author had studied. Since then more hoards have added refinements to this sequence.

The six original 'periods' proposed by Gupta in the Amaravati Catalogue have since become nine as described above. Gupta's 'periods' are now termed 'Series' because the chronological relationship between them is less simple than one following straight after another. For example, Series II may be contemporary with the latest issues of Series I but from a different area. Likewise Series IVb and IVc are only separated because of their generic difference; they are probably roughly contemporary.

The Amaravati hoard was important in establishing that Series I had all but disappeared from circulation by the time Series III was issued: only two Series I coins were represented there. At the other end of the time scale, the hoard was buried before the introduction of certain types in Series VI and VII (Types 560-566, 572, 574, 575, 582, and 586), thus providing a chronological marker that these types are late. This is examined in more detail in the Introduction to Series VI and VII.

## (b) Hoards containing predominantly Series I coins

The few hoards of Series I coins come from a restricted area of the Magadha homeland and its environs (Maps 3 & 5). They include Aurihar, Bargama, Dalmau, Golakhpur, Jaunpur, Patna, Rajghat, Sasaram, Uziaraghat, Pratabgarh, the Kulkarni hoard and the unprovenanced '1999 hoard'. The map shows a spread that goes further west than the traditional location of Magadha *janapada* centred on modern Patna (see introduction to Series I pp. 86-101). Most of these hoards contain exclusively coins of Series I, but the Bargama hoard (Sharma &Verma 2001-2) was mixed with four-mark *janapada* coins close in style and subject matter to those of Kosala. This hoard was also located a little further away from the heartland of Magadha.

Hoards mixing Series I with later Series are few, and usually with Series I as strays only, such as in the Amaravati, Thathari, Vembavur, and Ramna hoards.

The chronological implications of the Series I hoards are discussed in the Introduction to Series I in the Catalogue section and further details are given in Appendix 8.

## (c) The Gokulavana Hoard (Gupta 1959)

The dating of Series Va, VIa, Vb and VIb relative to one another is not straightforward. The critical factor is whether the Bold reverse marks were introduced in all mints virtually simultaneously or whether there was a period when some mints used Bold marks while others did not. Here the Gokulavana hoard, found in Sultanpur district in the mid-Gangetic plains, offers some evidence. It contained two coins of Series IVd along with 173 coins of Va and b, distributed as shown in Table 2.

This hoard was deposited not long after the introduction of Bold reverse marks, yet it contains no examples of Series VI, whether with or without Bold marks. Even though the presence of bold reverse marks was not recorded, there is no doubt it contained 25 coins of Series Vb which are known only with Bold reverse marks. So before Series VI was issued, Bold reverse marks had been initiated in Series V, and thus Series VIa is in all probability later than Vb. That in turn would suggest Bold marks were not introduced everywhere simultaneously: early issues of Series VI (i.e.VIa) were issued with no Bold marks after coins of Series Vb had already been issued with them. In the first edition of this book, caution was advised here: because of the fairly small size of the hoard, the issue of the relatively scarce Series VIa had probably already begun in another region, but none had found their way into this hoard. However it is now considered unlikely that if Series VI had begun, no examples of either VIa or VIb would have found their way into a hoard of 177 coins that contained 25 types. Thus the Gokulavana hoard assumes great importance in showing two chronological markers: Series V precedes VI, and the introduction of Bold reverse marks straddles the transition from V to VI. (It is assumed that during this period, more than one mint was operative. The size of the Mauryan Empire, coupled with the difficulty of transporting valuable parcels of coin over hundreds of kilometres in a monsoon climate, would likely have prompted the setting up of regional mints. It is also corroborated to some extent by local variation in the size and style of bankers marks on earlier Series, and the regional flavour of some hoards, particularly towards the end of the Mauryan period, as discussed above. There is however no literary support from the *Arthashastra* one way or the other on this matter.)

| **Series &Type** | **No. of coins** | **Series &Type** | **No. of coins** | **Series &Type** | **No. of coins** |
|---|---|---|---|---|---|
| *Series IVd* | | *Series Va* | | *Series Vb* | |
| 424 | 1 | 488 | 7 | 509 | 12 |
| 428 | 1 | 489 | 2 | 516 | 14 |
| *Series Va* | | 490 | 1 | 518 | 3 |
| 477 | 4 | 493 | 1 | 519 | 5 |
| 479 | 1 | 498 | 1 | 522 | 1 |
| 480 | 1 | 499 | 7 | 523 | 1 |
| 481 | 1 | 501 | 1 | 524 | 1 |
| 482 | 21 | 505/519 | 13 | *Va or b* | |
| 486 | 2 | 506 | 3 | 507/510 | 72 |

Table 2: Contents of the Gokulavana hoard

## (d) The 'Big Bhir' Taxila Hoard of 1924 (Walsh 1939, Gupta 1950)

This hoard of about 1167 coins contained examples of Series Va in mint condition which led to the conclusion that they were the most recent in the hoard. The other *karshapanas* all belonged to earlier Series. Because the hoard also contained Classical coins its date of deposition could be placed fairly confidently to the time of the accession of the first Mauryan emperor, Chandragupta, in 321 BC. (See also under Hoards containing Classical coins page 43.)

## (e) The 'Kathy White' hoard

This hoard, described by Errington (2003), was a part of the massive Mir Zakah hoard from Afghanistan, recovered from a well. It contained 854 coins ranging from Series II to VII but along with other parcels from this source it had no examples of Type 566, perhaps the commonest of all types in Series VI, thus corroborating the evidence from the Amaravati hoard that Type 566 is one of the last to be issued.

## (f) The Patraha Hoard (Bhattacharya 1940)

The Patraha hoard, (also called the Purnea Hoard), from the lower Ganga valley, contained 1656 classifiable coins. It was deposited towards the end of the silver *karshapana* issues. It has a typical long 'tail' of older types: one of Series II, 3 of Series III, 14 of Series IVa-c, and 311 of Series IVd. There are 533 of Series V and 701 of Series VI. Series VII has 62 coins. It is missing certain common Series VI types (556, 557, 566, and 575). Types 556 and 557 are small variants of 555, which is represented, so these too may not have been noticed in the classification. This leaves Types 566 and 575 as potentially postdating the closure of the hoard. However, the placing of 575 later than 574 contradicts the stronger evidence from the Rairh hoards (see next item). Type 575 is often poorly struck with blurred punches. Possibly it was not picked up by the author, who was working well before any reliable classification of *karshapanas* was available. Thus we are left with only one unassailable piece of chronological evidence from this hoard: Type 566 is the latest type of the regular *karshapana* issues.

## (g) Rairh hoards (Puri 1940)

The archaeological site of Rairh yielded five levels containing *karshapanas* of which Rairh III (132 coins), IV (535 coins), and V (1983 coins) came from the same trench complex, where V was the oldest and IV the most recent (Table 3). These hoards were buried at the time of the final issues of the silver punchmarked coinage. Rairh III

| **Hoard** | **GH Type** | | | | | | | | | | | | | **Series VII** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 542 | 543 | 546 | 550 | 552 | 555 | 556 | 566 | 567 | 568-70 | 572 | 574 | 575 | |
| Rairh IV | 0.7 | 1.7 | 0 | 0.9 | 0.7 | 0.7 | 0 | 0.2 | 0 | **29.1** | 4.1 | 3.2 | **17.6** | 3.0 |
| Rairh III | 0.7 | 0 | 0 | 0 | 0 | 0 | 0 | **87.8** | 0 | 2.2 | 7.5 | 0 | 0 | 0 |
| Rairh V | 0.6 | 5.1 | 0 | 1.3 | 0.75 | 0.8 | 0.05 | 0 | 0.25 | **12.8** | 5.1 | 5.2 | **14.0** | 2.3 |

Table 3: Frequency of common later Mauryan types in Rairh hoards as % of total in hoard. Numbers greater than 10% shown in bold

stands out as distinct from the other two in having 87.8% of the coins of one type only, 566. The absence of many other common types of Series VI and VII in this hoard suggests we cannot deduce any chronological information from it: most likely it comprises a special selection made by the owner of the often-debased 566 (Fig. 10a), which was mixed with a handful of other circulating coins. This is interesting in its own right, because it may indicate a merchant selecting debased coin from the circulating pool, but it is not relevant in the present context. The other two hoards however indicate reasonably consistent high proportions for Types 568-70 (which are minor variants of the same type) and Type 575, while having much lower proportions of the extremely common Types 566, 567 and 574. These hoards may thus represent a 'normal' spread of types circulating at a time when 566, 567 and 574 were only just beginning to come into circulation, and the two hoards (and perhaps all three hoards) may have been deposited at about the same time. The three together have only one common Series VI type absent, Type 546, which may be a type from a distant mint. There are other subtle trends hinting at chronology. Whereas Types 566 and 567 are barely present except for the specially selected examples in Rairh III, Types 568/70 and 575 are much more common. That confirms these types were well into circulation at this time. Finally, it is clear that Series VII, which is represented by ten different types in Rairh III and IV, although not in very large numbers, probably predates the late Types 566, 567 and 574.

### **(h) The Barwani hoard** (Gupta 1992)

A large hoard of 3450 coins from the Narmada valley, also deposited late in the *karshapana* sequence. Once again there is a 'tail' of older issues, indicating this was probably a typical cross section of coins circulating at the time of burial. The common late types missing here are 507, 546, 560-566, 568-9, and 574. Only one example of 575 is present. Gupta noted some possible new varieties including 596a but the others were unclear.

Type 507 differs from 510 (of which there are 264 examples) only in the absence of a Bold reverse mark and thus examples may not have been noticed. Interestingly, Type 546 is not positively identified in this hoard, although Errington (2003) indicates that four coins could belong to any of the three linked types in this class (Types 544-546). All three are also completely missing from the five Rairh hoards. Five other hoards listed by Errington - Parasa Dayarama, 1916 UP hoard, Mirzapur, Taregna and Goroghat Stupa, also have none of these three types, providing some evidence that they are also a late issue, although some of these hoards are quite small. Types 560-565, a group linked by use of the triskeles symbol, are also missing from Amaravati, which makes much more compelling evidence for their being a late issue. In this context, the Rairh hoards, which do contain examples, would be later in date than Barwani or Amaravati and Types 560-565 would come before 566.

### (j) The Mahasthan hoard

Found during excavations at Mahasthangarh in Bangladesh (Boussac & Alam, 2001), this hoard of 93 coins contained regular *karshapanas* from Series IVa to Series VIb which would be unremarkable had it not contained high numbers of three Types, 344, 482, and 543, which display an unusual style on debased metal, and in some cases with fixed positions for the marks. These coins are discussed below under the section on 'Wayward coins'. The date of deposit of the hoard, from C14 evidence, was placed in the early first century AD, even though the regular coins themselves were manufactured from the fourth to the second centuries BC.

### (k) The Barikot Hoard

This hoard of 214 coins from the Swat valley in Pakistan was described by Susmita Bose Mujumdar, University of Calcutta, at an Oxford symposium in 2006. Its chief interest was its association with coins of ten Indo-Greek rulers from Antimachus to Apollodotus II. The latter's reign is placed around 80-65BC. The punchmarked coins included two allegedly from Series I, but the full range of later Series was present. 60 coins belonged to Series VI in which Types 543, 573, 574 and 575 dominated. It was noted that a sixth mark on Type 574 (included here as Type 574a) was frequent. The hoard provides useful corroborative evidence for the likely northwestern source for Types 573-575, and also suggests that punchmarked silver was still in use within the Indo-Greek sphere of influence in the early first century BC.

## 2 Weight range in hoards

The range of weights of coins in any hoard of reasonable size can help to indicate the chronology, since the coins longest in circulation will tend to be the most worn. Harnessing the weight factor of course requires a low weight tolerance at the time of issue; for most of the *karshapana* period this seems to be indeed the case. In the Amaravati hoard, for example, Gupta found the range of weights for mint fresh coins varied from 51 to 54 grains (3.30-3.43 grams) and only three coins exceeded 56.5 grains (3.66 grams) (Gupta 1963, 138). There is however plenty of evidence that weights vary more in later coinage, especially amongst types missing from (i.e. later than) the Amaravati hoard. Perhaps there was excessive pressure on the mint workmen, who were called upon to increase greatly the volume of output in Series VI, and as a consequence had less time to maintain standards.

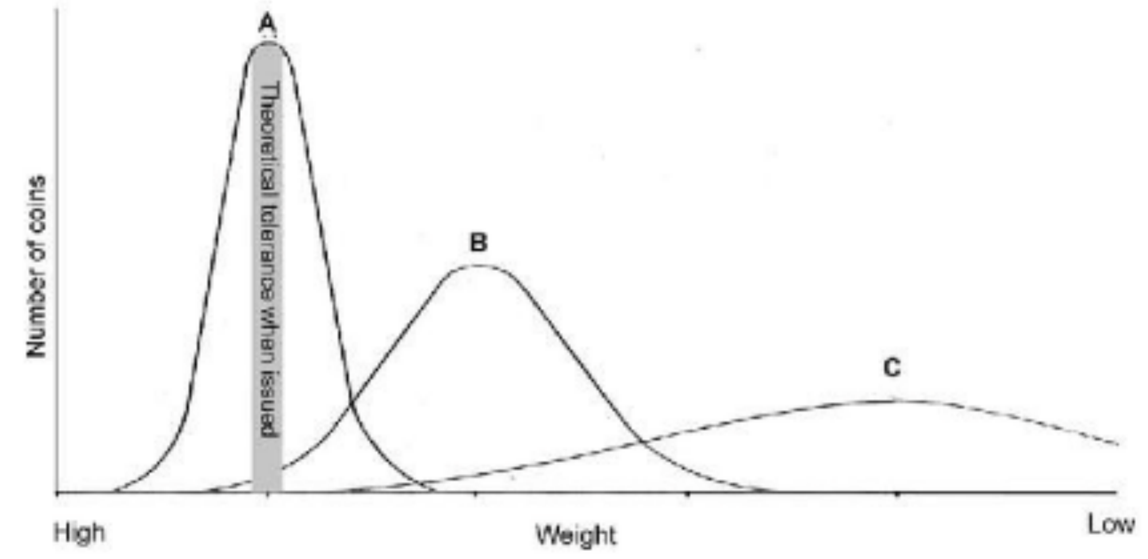


Fig. 4: Graph to show schematic weight distributions of hoards (a) mint-fresh, (b) after moderate circulation (c) after long circulation. Most Punchmarked coin hoards conform to (c). (After Kosambi, 1966)

The chronological arrangement gleaned from the range of types in hoards is strongly corroborated by the weight factor. In examining the weights of the two Taxila hoards in the course of his study of bankers marks, Kosambi (1941-2, 1966) constructed theoretical weight graphs representing coins circulating at the time of issue, and after moderate and long circulation, (Fig. 4) and then plotted the weights of the two Taxila hoards to test their conformity. He found the 1924 Taxila hoard, with coins dating back many years, gave a graph of Type (c) while the 1912 hoard composed of recently issued coins conformed to curve (b).

## 3 Fabric and size

As a general rule, the pre-Imperial coins found within the original homeland of Magadha are large and thin, and as time goes on, average size decreases and thickness increases. The extremes of size which have been noted are 10 and 35 mm in diameter (Fig. 5 and Table 1). However, there is a large range of sizes within each Series, and perhaps

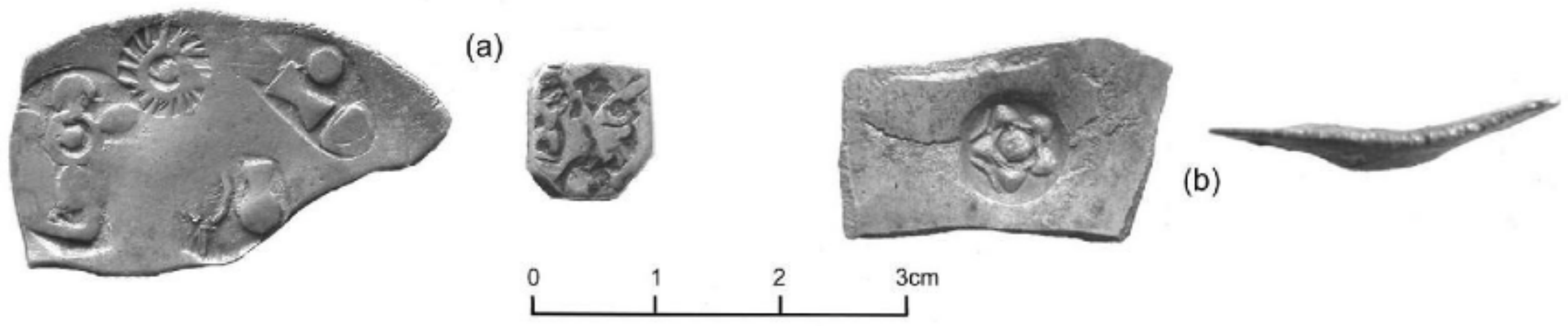


Fig. 5: (a) Extremes of size of *karshapanas*: Left, a coin of Series I, right, a late Mauryan coin. Both are approximately the same weight. (b) Early Narhan coin with deeply struck central punch x1.2.

in some cases there were local factors (different customs at different mints) influencing flan size which would not necessarily have chronological implications. Size can only be used therefore as a broad indicator of age.

Shape has virtually no relevance to chronology. The commonest method of obtaining the correct weight for a blank was to beat metal sheets to a suitable thickness then cut out the blanks with shears, weigh them, and trim down to the closest match to the standard weight that could be done by eye. Blanks which had already been cut too light were melted together with the trimming scraps and re-hammered. Sometimes (as noted in the next section) blanks were made out of circular globules, which are clearly hammered out from molten metal which had been heated in a ladle. Such techniques are known from the very beginning of coinage right up to Series VII and cannot be used for chronology (Fig. 6). The coin edges help to reveal the procedures by which flans were prepared prior to striking. Circular-like coins with rounded edges betray molten globules that were hammered out, while shear-marks are a clear sign of cutting. Ragged edges are an indication of hammering while the blank was insufficiently annealed.

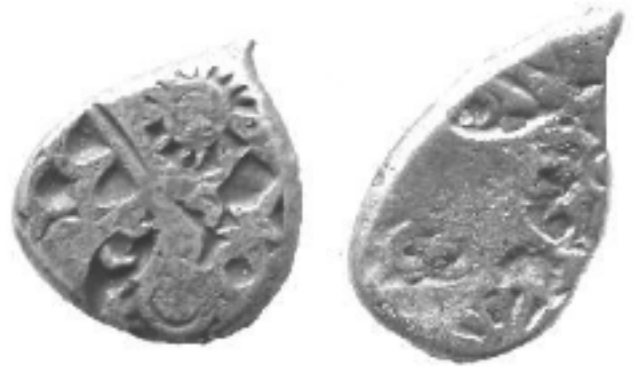


Fig. 6: Coins with a 'drip tip' show the weight had already been fixed before the metal scraps were placed in the ladle. However the coin on the right weighs only 2.80 grams – suggesting it was judged by eye.x 1.5.

All coins in the Magadha-Mauryan *karshapana* series are struck from punches. In the early *janapada* series of some local states, other methods of manufacture were sometimes used. Casting into moulds was rare, but striking punches into semi-molten metal is evident, for example on the Narhan coins (Fig. 5b) where the impressions are extremely deep and sometimes rather blurred. The almost exclusively globular flans of the earliest Series 0 coins suggest that in the earliest phase, coin blanks started in a molten state (Fig. 1a).

## 4 Weight systems

The metrology of the punchmarked coinages is a complex subject. As we have seen, the earliest coinages were produced on a wide variety of weights which vary from state to state. There is a general tendency for weight standards to decrease with time, and eventually to amalgamate into fewer standards as inter-state trade developed. Finally the *karshapana* becomes the universal standard, maintaining a constant weight throughout the Magadha-Nanda-Maurya period. By this time the tolerance has been brought to a tight range - unworn specimens nearly all lie within the range 3.3-3.5 grams – indicating a strict control over manufacture, and an accurate system of weighing.

Attempts to relate the Indian weight standards to various standards in use further to the west in the area of the Persian Empire (roughly present Turkey, Iraq, Afghanistan and eastern Pakistan) are inconclusive. Until the growth of the Magadhan Empire, there was a geographic gap of some 1500 km between the eastern limit of the 'Persian' ambit of coinages and the early coin-using states of Kosala and Magadha in the Gangetic plains. That may have been enough to allow separate weight systems to evolve in the east. The Gangetic region does not seem to have had a surplus of gold or silver to attract trade with the Persian Empire: its sources were probably small scale mines and streams mainly in Assam and the Himalayas. Important cities such as Charsaada (Pushkalavati) and Taxila in Gandhara probably maintained trading relationships across this long stretch of land, but the balance of evidence – be it weight systems, coin types, methods of manufacture, or bankers marks - lends support to the likelihood that coin invention in the Gangetic states was largely uninfluenced by western models, as discussed more fully below under the section on Absolute Dating.

Comparison of the weight systems of the Western and Eastern enclaves of early coinage illustrates this point. The three main early coinages circulating in the Gandharan region to the west of the Gangetic states were:

1. The Persian siglos of *c.*5.5 grams, current from *c.*520 to the mid-fourth century BC. These coins were issued by Darius and his successors to facilitate the organising of the lands he conquered. This denomination was not imitated by any local dynasty in the Gandhara region.
2. The 'Chaman Hazouri' local style coins issued in the Kabul Valley about the end of the fifth century (Fig. 14d), using a spread of weights between 12.25 and 2.8 grams with no predominant weight, perhaps not intended to be on any fixed system of weights (Mitchiner 2004, 2046-2061). The heavier coins, deemed to be the earlier, used animal marks while the lighter ones used geometric marks.
3. The 'Bent bar' series of coins issued in Gandhara (northern Pakistan) from about the early fifth century (Marshall 1951: Taxila) (Fig. 14b). These were coined on a standard of 11.2 grams which equates to the Persian shekel or double siglos. Again they are issued along with fractions ranging from 5.6 to 0.5 grams (Mitchiner 2004, 2075, 2121-2162).

The main standards locally produced in Gandhara are thus all relatively heavy at between 11 and 12 grams.

To the east, the early Gangetic weight ranges are, in grams:
Magadha 7.6, 5.4, 4.6, 3.4
Kosala/Kashi 4.5, 4.2, 4.1, 3.1, 2.65
Kashi (early) 6.3, 5.1
Narhan coins 7.2
Kuntala ('Pulley coins') 6.8, 4.7
Ayodhya 5.3

Although these two groups are in stark contrast, one can make much or little of the relationships between them. If one is trying to prove they are linked, 'evidence' can be assembled by invoking multiples and fractions of each denomination of the many weight systems (e.g. as done by Mitchiner 2004, 680), thus providing a more or less continuous scale of weights into which anything can be fitted. Such efforts are not very convincing. Bearing in mind the vast distances between the coining regions, the fragmented political systems, the time range and a probably rather loose human control over weight systems, no clear relationships can in truth be postulated. Until Magadha brought most of Northern India under its control, each budding state invented its own weight systems, often without regard for others. Proof of this is seen in the array of different Indian coin weights. Continuity in weight systems could still endure for long periods in certain circumstances, as Marshall pointed out in comparing the stone weights from the Indus Valley sites (before 1500 BC) with those of Sirkap at the end of the last millennium BC (Marshall 1951, 508-512). But such continuity as existed was at least initially paralleled by many short-lived local systems.

## 5 Bankers marks and their successors as chronological markers

Bankers marks undergo a subtle metamorphosis in time, which should provide evidence for chronology. Because these changes tended to happen gradually, they seldom provide a watertight order of types, but rather they corroborate the information obtained from all the other methods employed in chronological studies. It has been surmised that there were initially two reasons for the addition of bankers marks: to verify weight and to test for metal purity, but these functions may have become subsumed later. The more radical changes seen in the later Imperial period are attributed to the authorities' attempts, at last, to control and finally stop this vandalisation of the coinage, which, to the orderly-minded, must have appeared like scars from an unending pox on their daily change. Only after a great deal of twisting and turning did the task ultimately succeed, only to be overtaken shortly afterwards by the demise of the Mauryan Empire.

The metamorphosis in bankers marks is governed by a number of different factors not all pulling in the same direction. For example mark size may vary from region to region which may cut across the general trend for them to become smaller with the passage oftime. Likewise the trend for early marks to be geometric and later ones to introduce animate or artefact designs is not a golden rule; a few animate forms can be seen on Series 0 coins. Nevertheless, a broad temporal evolution does exist. Four phases can be detected: initial bankers marks, evolved bankers marks, Miniature marks and Bold marks. In addition towards the end of *karshapana* coinage a range of other reverse marks is seen. These phases are described below.

## Phase I: Initial bankers marks

On the early *janapada* coinages, within which are included Series 0 and early Series I of the Magadha coinages, flans were broad, so there was space for bankers marks to be quite large (up to 10mm diameter). Some of these large-flan coins are full of bankers marks on the obverse with either none or only a few on the reverse (Fig. 7). It seems the very earliest bankers marks were customarily first added to the obverse and only spilled over on to the reverse when the obverse became full. Not long after the introduction of Series I they become somewhat commoner on the reverse. Some of these early marks are quite ostentatious, as if they were intended to stand out and be noticed (Fig. 8a). Yet at the same time we see a few examples of paltry marks – small, usually circular in outline and of indeterminate design, often punched quite deeply into the metal (Fig. 8b arrowed).

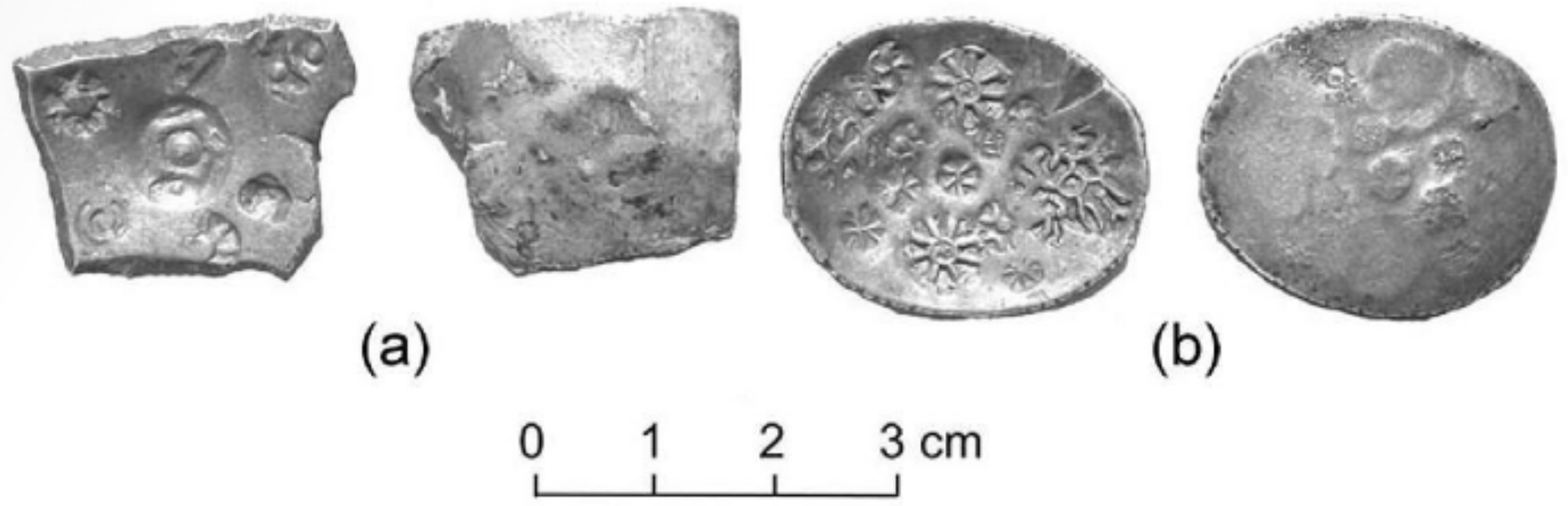


Fig. 7: Examples of bankers marks on the obverses of early punchmarked coins where the reverse is still blank: (a) Narhan series (b) Jaunpur series. S/S.

Such marks would be commensurate with testing the metal for purity, especially to detect plated forgeries with a base metal core (see the section below under Forgeries, page 66). To perform this function, the design of the mark was of no consequence, hence little care was taken in its preparation. It simply needed to pierce the metal deeply, and the smaller the diameter of the mark, the more easily this was achieved. Thus in the pre-Imperial period, bankers marks appear to have had two separate functions, one to verify weight where many different weight systems were circulating, the other to verify metal purity. In a time when specialised occupations were organised into guilds as described in the *Arthashastra*, these two functions may have been carried out by two different guilds. This represents the first phase of the bankers marks.

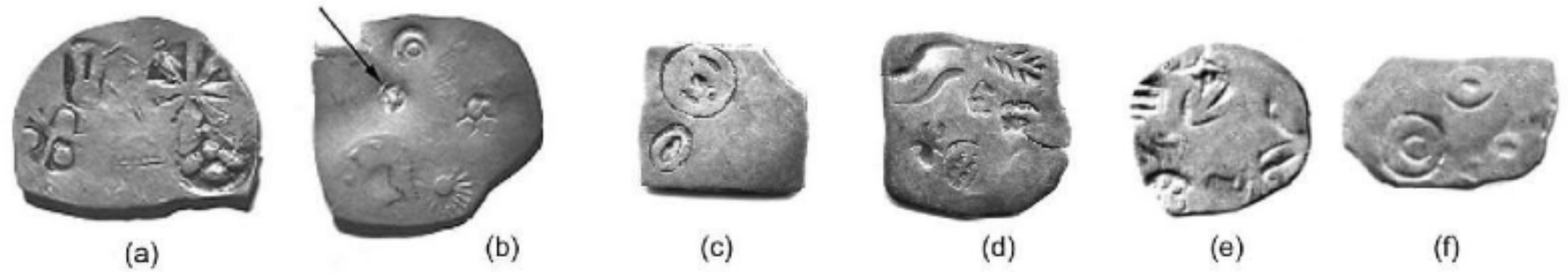


Fig. 8: Examples of (a) prominent and (b) inconspicuous bankers marks on reverses of Series I coins. (c) – (f) show coins from the Magadhan hoard (Appendix 4) with prominent large bankers marks. S/S.

There is also a possibility that variation in the size and form of early bankers marks represents some regional insularity, reflecting local custom. This gains support from examples as seen in Fig. 8 (a) and (b), where one coin has only large marks and the other only small ones, but it does not fit well with the perception that pre-Imperial Magadha was quite a small region with no more than two mints, which clearly had some inter-state trade with its neighbours Kosala and Kashi, as seen from the occasional intermixing of their coins in hoards.

Nevertheless Magadhan hoards have occasionally been observed where there is a preponderance of large bankers marks. One such, the '1978 hoard', is detailed in Appendix 4. It contained 102 coins, 99 of which belonged to Series III or IVd, but within these two series, only limited numbers of types were represented. Over 30 of the coins had large, bold bankers marks (Fig. 8 (c) - (f)). The hoard contained no restruck coins - a highly unusual feature for a hoard of this period. Furthermore, all 29 coins in the hoard with rhinoceros class mark were types which do not overstrike Series II coins; the two types with rhinoceros class mark which do overstrike Series II were absent. Some very common contemporary types in Series III and IV were missing from this hoard. All these factors point to a hoard accumulated in an isolated region where trade from outside was insufficient to introduce the general mix of Magadha coins circulating in the early-mid fourth century. The coins were not in mint state so cannot have been a recently-received batch fresh from the mint. Unfortunately the provenance of the hoard is unknown. The most likely explanation for the larger bankers marks is that they are the work of an individual or group of individuals whose local custom was to employ larger-than-average bankers marks.

## Phase 2: Evolved bankers marks

As flans became smaller, bankers marks are also seen to shrink in size, though whether this is cause and effect is unproven. In any case, the Magadha coinage from Series II onward shows a subtle change from the polarised 'ostentatious' and 'paltry' marks: the bulk of marks seem to belong neither to one nor the other, but occupy a range in between. Such marks are termed 'evolved bankers marks'. Yet even here there are occasional examples of artistic delicacy, along with a fair proportion of very small dot-like marks, but these seldom dented the flans as they had done in Series I, because the flans were now thicker. Here we see the tailing-off of the first phase of bankers marks and the introduction of the second, which runs until the beginning of Series V.

There is no obvious explanation for this change. As social complexity grows, customs which originated with a clear purpose sometimes outlive their usefulness but persist because of social inertia – they become embedded as traditions perhaps more as a comfort factor than for any practical function. Populations can be quite irrational about accepting or not accepting different kinds of currency, especially where there is no official line to counter rumour and gossip. History is full of examples. The famous Maria Theresa thaler, issued in Vienna in 1780 and subsequently imitated by various mints until the mid-twentieth century, was virtually the only silver coin which merchants in the Arabian peninsula would accept throughout the nineteenth and early twentieth centuries, even though its fineness was only .833 and there were plenty of other coins with better silver content.

The Medieval British custom where the monarch gave small change, called Maundy money, to selected poor persons once a year, has survived into the present even though the money now given is in silver pence, cannot be spent, adds up to less than £1, and is given to people who are selected not for their poverty but for contributions to society through the Protestant church. The custom survives for little more than traditional reasons.

There is just a hint that something slightly irrational happened with the bankers marks of Magadha in the second phase, as the state began its annexation of neighbouring territories. Territorial expansion was bringing together a great variety of coins, of unfamiliar types and weights, which would likely have become mixed in trade. Up to twenty different weight systems could have been encountered in the Lower Gangetic states at this time. Most citizens, uneducated and illiterate, would not necessarily know what the official marks on the coins meant, let alone the array of bankers marks which were supposed to guarantee different weights. These marks had thus already lost their original, specific purpose, yet the overall appearance of coins with a spread of different marks, large and small often on both sides, had become the norm of acceptable currency.

Hoard evidence shows the archaic coinages of the pre-imperial *janapadas* were quite quickly withdrawn from circulation by the Magadhan government at about the time of the introduction of Series II, perhaps as a response to the confused state of the currency. It is testimony to the advanced state of social infrastructure that the withdrawal of a currency could be efficiently achieved at this time in history. The disarray of the old money was suddenly replaced by Series II coins that were smaller, neater, and contained just five marks on one side only. There was no longer any need to stamp coins to indicate their weight, because all the new coins were made to the same *karshapana* weight system. Neither was there much need to test for plated forgeries – they are extremely uncommon in hoards of this period. In support of this, the coins of Series II – when seen in their original state as opposed to having been restruck later - show very few bankers marks. They start to creep back, slowly at first, but increasingly from Series III onwards. It is possible that if the new currency was issued as abruptly as the evidence suggests, people actually might have mistrusted it for a while, prompting the addition of random marks of indeterminate character as much for cosmetic as for practical purposes. But if the cosmetic factor played any part, it would have been short-lived; people soon come to accept novelty once it becomes the norm. It would not have affected the longer-term feeling that money with many small unintelligible marks was confusing for ordinary people.

Another possible explanation for the 'nondescript' bankers marks of the evolved period is based on evidence from the 'schroff marks' placed on the rupees of the Mughal period in India. In the late eighteenth and early nineteenth centuries the subcontinent was awash with numerous varieties of 'rupees' issued by the many different states, which ranged in weight and purity. Where this situation obtained, we see a proliferation of scroff marks on the coins, but when a stable, uniform currency was in place, these marks are fewer. Schroffs would add marks to coins according to their weight, using a commonly accepted code. A newly minted coin needed no marks. Schroffs would weigh circulating coins, and if they contained insufficient bankers marks for their weight more would be added to bring them up to the appropriate number. Thus both the public and money changers would know from the number of bankers marks approximately what discount should be applied to any coin. Interestingly, the inverse relationship between weight and number of bankers marks was exactly what Kosambi found from testing Mauryan coins (Kosambi 1941-2) although he placed a different interpretation on it.

Although conditions in ancient time may have been different to Mughal time, 'evolved' bankers marks on punchmarked coins might even then have represented a coded discounting mechanism. At the start of Series II there was no problem, but as time extended into decades and the intensity of circulation increased, weight differences between newer and older coins prompted this coded monitoring system.

Clearly, these theories are speculative, but either of them fits the complex evidence from the coins themselves.

## Phase 3: Miniature reverse marks (for a full list of these marks see Appendix 1)

The third phase sees the falling-off of bankers marks and the introduction of a raft of reverse marks that imitate one of the official obverse marks but in miniature form.

The Miniature marks present some puzzling features. They comprise miniaturised copies from a small pool of official obverse marks, often long-life marks, that had been in use from Series I on, but ending with two marks not introduced as official obverse marks until Series VI and VII. They are added to coins of Series II on, but they reach a peak on coins of Series IVd, occurring on one in four coins in some hoards. They are frequently placed towards the centre of the coin. They become fewer on coins of Series Va and VIa, and disappear completely on coins of Vb and VIb.

There are two possible explanations. Miniature marks could represent a retrospective activity – a policy introduced at the time of Series VI but applied to older coins in circulation, but not the current coins of Vb VIb or VII. By far the commonest Miniature mark, and also the easiest to spot, is the crescent on arches mark of Series VIa-b. (mark 374, Fig. 9 (a)). It is an unequivocal signal that the custom of adding the Miniature marks reached its maximum intensity in Series VI, when they were being applied most often to coins of Series IVd. The other late Miniature mark, not officially introduced until Series VII (which runs in parallel to Series VI), is the dog atop a four-squared square (mark 472).

The alternative explanation is that Miniature marks were brought in during Series III or IV, and applied to selected circulating coins, using marks current at that time, but the system continued into Series VI when they would have used the two late marks 374 and 472 but applied them only to older coins in circulation.

What could have been the purpose of these marks? They seem to represent the mint's attempt to bring the whole phenomenon of 'illegal' marking under control. Whatever measures had been taken previously (for example, perhaps, reduction of flan size to lessen the area available for bankers marks) they had clearly not been effective. In the *Arthashastra* there is mention of a person called the 'Rupa-tarka' or 'Examiner of coins'. He may have been an official to whom members of the public or money-changers could take coins for authentication, in which case he might have been responsible for stamping them on the reverse with the Miniature marks to give an official guarantee of weight or fineness. Coins so stamped were not supposed to be further marked on either obverse or reverse. This may have had some success, as can be seen from the disappearance of normal bankers marks from the obverses of later Series IV coins as well as a reduction in the number on the reverse. But the mint has not yet reached a final solution.

## Phase 4: Bold reverse marks

The fact that no more than one in four coins of pre-Series V contains a Miniature mark suggests that the whole process of Miniature marking was abandoned before all circulating coins could be stamped. That was the point at which the 'Bold' reverse mark – the last and most successful of all the attempts to extinguish defacing by the merchants - was introduced.

The Bold mark is defined as a full-size, or nearly full-size, official mark on the reverse, termed here 'Bold' to distinguish from the Miniature marks. It was added to the reverse at the same time as the five official marks were placed on the obverse. It is often the same as one of the five obverse marks and usually coincides with a particular combination of obverse marks (Fig. 10). In many cases it is identical to the fourth obverse mark. This characterises all the coins in Series Vb and VIb: there are no exceptions.

There is however a grey area between the Miniature marks and the Bold marks, as if this change in policy went through a transitional phase. In Series Vb it is not always possible to distinguish Miniature marks from the Bold ones, because the distinction in size is at first very little. A wider range of replicas of official marks seems to

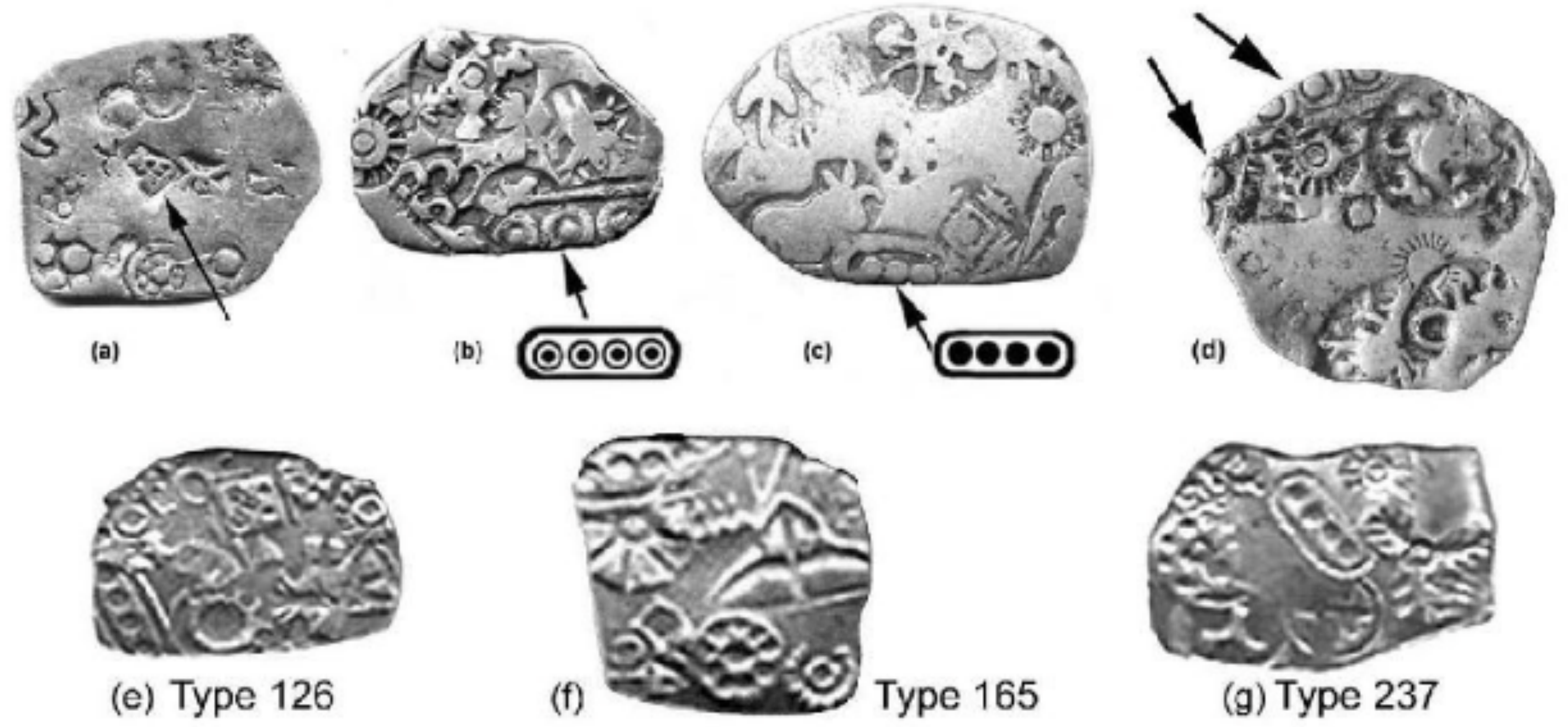

(a) (b) (c) (d)
(e) Type 126 (f) Type 165 (g) Type 237

Fig. 9: (a) Miniature replica of the official Mauryan 'arches and crescent' mark shown prominently on the reverse of a coin of Series III; (b), (c) and (d) large countermarks 481 and 482 seen on some coins of Series III and IV: on (d) both are seen on the same coin. (e) – (g) rare examples of these marks on Series I coins. (a) – (d) S/S, (e) – (g) not to scale.

appear briefly on reverses in Series Va. Exactly what was going on at this stage is not at all clear. Judging from the speed at which the old bankers marks vanish completely from the new coinage, the Bold marks finally eliminated the practice of adding bankers marks. The change appears to have taken place at the time of issue of Types 507-508 and 510-515 which straddle Series Va and Vb. These types all share the same five official obverse marks and belong to different Series only because of the presence or absence of Bold marks. At the same time, the mint must have continued placing Miniature marks on older coins – a perfectly rational policy as the Bold mark initiative did not address the problem of the older coins in circulation.

Examples that do not conform to this template should not diminish the relevance of the key divisions between Bankers, Miniature, and Bold marks; they simply illustrate the fascinating story of a government trying to maintain order over its coinage throughout vast tracts of territory and experiencing occasional confusion, dissent, or ineptitude amongst its subjects.

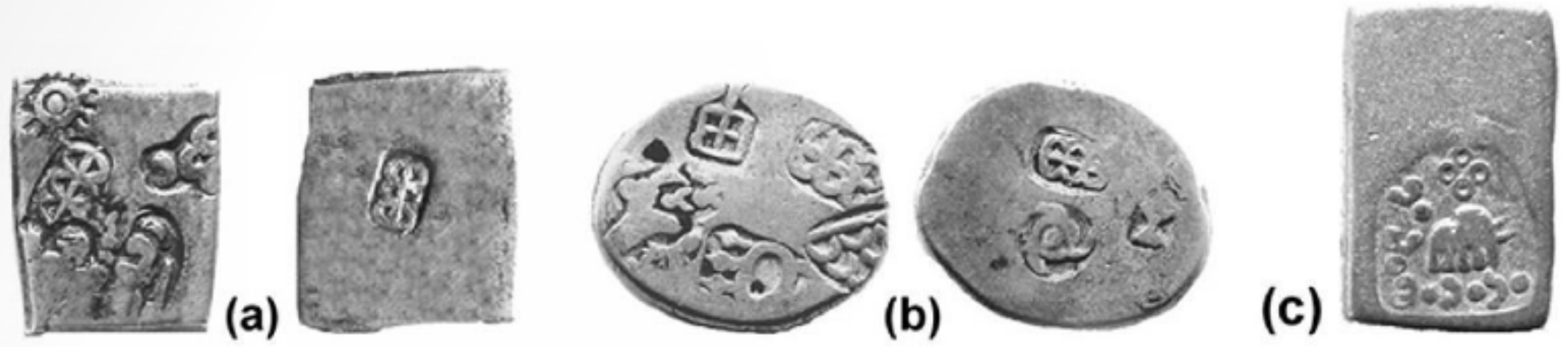


Fig. 10: (a) Bold mark on reverse of Type 566, repeating the fourth obverse mark x 1.25 (b) The same Bold mark on Type 594 (Series VII) but accompanied by triskeles and dumbbell x 1.5 (c) Composite reverse mark with 'Ujjain symbol' seen on some coins of Type 566 x 1.5.

## One-off special marks

There is an array of further additional marks that begin to appear on later Mauryan coins. Some are contemporary with the Mauryan period as seen from their controlled, predictable nature (e.g the 'triskeles' on the reverses of Type 574 and others, or the 'dumbbell' on Series VII coins, Fig. 10 (b)). Others are suspected of being the product of post-Mauryan counterstamping. They are listed below.

(a) Two large countermarks (marks 481 and 482) comprising variants of four dots in a row within an outline appear on the obverses of a small number of coins (Fig. 9 (b)-(d)) during Series III. They cease very early in Series IV. Thus they help to separate early Series IV from later coins. There is no clue to their purpose. Mark 481 has also been seen, very rarely, on some Series I coins (Fig. 9 (e)-(g)), thus providing corroborative evidence that a small number of Series I coins remained in circulation in later time.

(b) Two elaborate countermarks with an elephant, taurines and a 'Ujjain' symbol or a dot with four outward-facing arcs (marks 543 and 544) appear on the reverses of some very worn coins of Type 566 (Series VIb, Fig. 10 (e)). (The 'taurine, symbol 167, see Appendix 2, is a dot with a tangent arc above that is assumed to resemble a bull's head although the 'horns' are sometimes forked at the ends suggesting that a bull is not the intended meaning). The Ujjain symbol, often with an elephant, is the commonest mark seen on post-Mauryan copper coins from the Ujjain area, although these countermarks are mainly found in the Eastern Gangetic plains. Why Type 566 was selected over all others for countermarking is unclear – the countermark is not seen on other types. The post-Mauryan circulation of silver coins is unusual; most of the post-Mauryan issues of the small states are of copper only. Going by the silver content (often debased but still recognisably silver), the date of the countermarking would therefore be earlier rather than later. The countermark suggests the political unit centred in this area drew upon the old Mauryan currency and 'authenticated' it to serve in local trade by adding its own stamp. It is thus a hybrid between Mauryan and post-Mauryan, indicating in all probability that a successor state in the Ujjain area was still able to trade using a silver coinage for a time. The coins are listed in Series VIII (Types 609-610).

(c) An elaborate mark like a candelabrum on a triangular base (mark 567) is seen as a sixth obverse mark on some coins of Type 574 (Fig. 11(c)). Not many coins have this mark; therefore it is probably unconnected with the main type.

(d) Further additional reverse marks, also copies of official obverse marks, appear on some coins in Series VIb particularly types 542, 543, 574 and in Series VII (Fig. 10 (b)). The symbol with three men all on one punch, which is unique to Series VII, is used as a reverse countermark on some Series VI and occasionally Series V coins (Fig. 11 (b)). Were it not for its random occurrence it would be classed as a Bold mark.

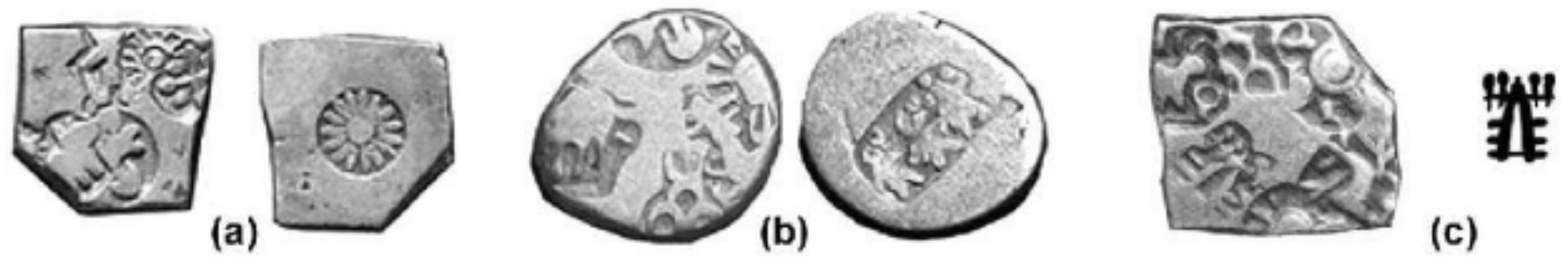


Fig. 11: (a) Series Va coin of Type 497 with large sun symbol on the reverse, without the usual dot and circle centre. As a part of Series Va the coin should not have the 'Bold' reverse mark. Courtesy Michael Mitchiner. (b) Series Va coin of Type 542 with three human figures counterstamped on the reverse (PankajTandon). (c) Coin of Type 574 with candelabrum-like extra sixth mark. (Michael Mitchiner). S/S.

Various other unusual reverse marks occur, mostly associated with post-Mauryan issues. For example a debased group from Mathura has been published by Murphy (2003-4) and Mitchiner (2004, 1357) on which many coins show a non-Mauryan type of sun on the reverse (Fig. 11(a)). This hoard is discussed further in the introduction to Series VIII. It may be a local issue.

## 6 Statistical analysis of bankers marks

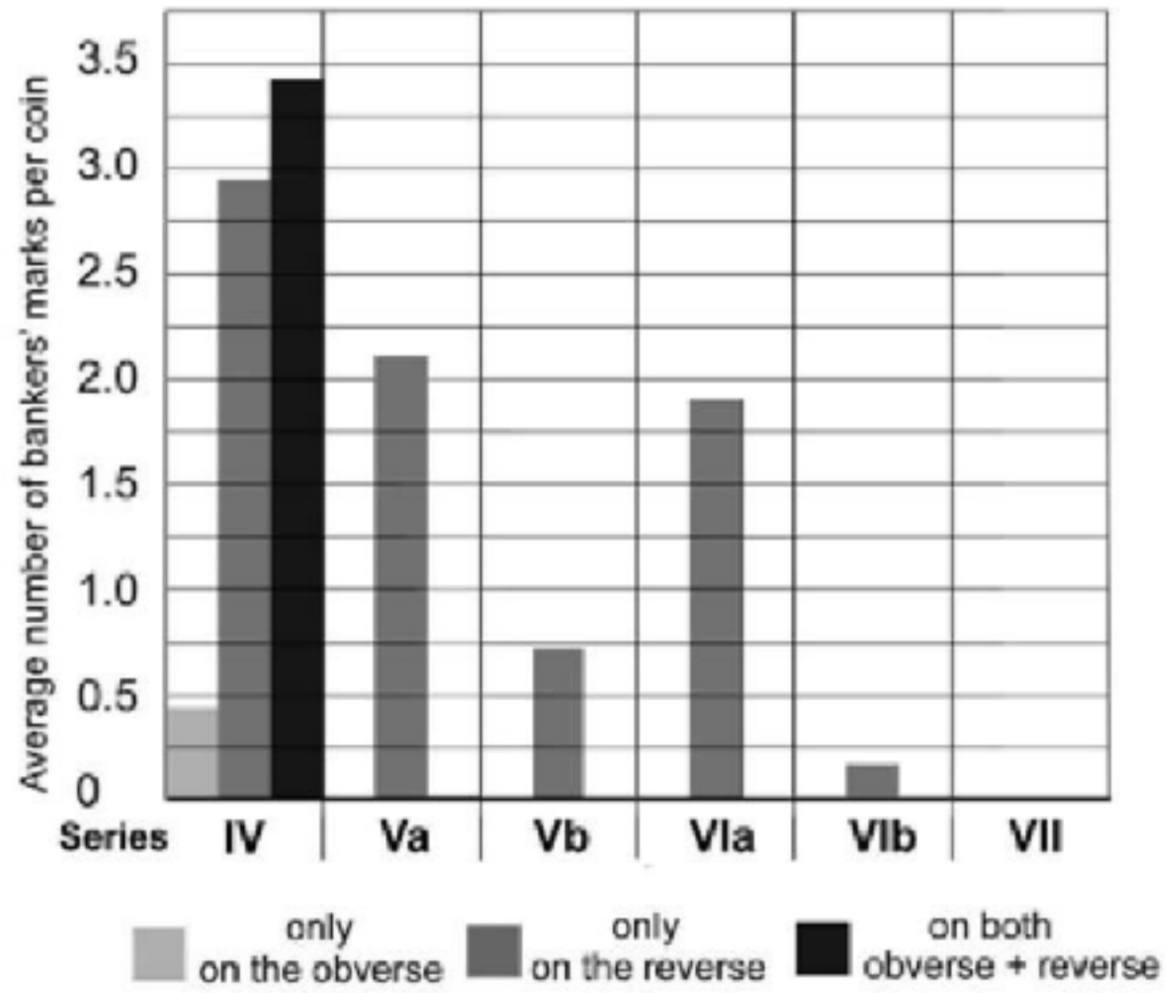


Table 4: Analysis of the numbers of bankers marks occurring on obverses and reverses from nine hoards from Series IV to VII.

Bankers marks died out when Bold marks were introduced, so a possible indication of chronology may show up from counting them on different Series, resting on the hypothesis that types which frequently carry bankers marks should be earlier than those which seldom or never carry them.

To this end, the bankers marks and other extra marks on Magadha-Mauryan coin hoards passing through trade in the 1970s and 1980s were recorded by the author. The results are plotted in Table 4, which embraces a total of 737 coins from Series IV to Series VII. Nine hoards were surveyed, one ending in late Series IV and the others all in Series VI/VII. The exercise omitted Series II-III because Series IV typifies Phase 2, evolved bankers marks, well enough, and it indicates the situation immediately before the introduction of Bold marks. The results do indeed verify the proposed chronological sequence from Series IV to VI. In Series IV, bankers marks occur on both obverse and reverse but much greater numbers are seen on the reverse. Series Va sees their disappearance from the obverse, never to return, but they persist on the reverse in reduced but nearly equal numbers through Series Va and VIa. However, in Series Vb their numbers are greatly reduced again, and by VIb they are almost extinct. In the sample studied, Series VII had no bankers marks at all. If bankers marks alone were taken as an indication of chronology the sequence would be IV, Va, VIa, Vb, VIb, VII. This is of course the sequence implied by the introduction of the Bold marks in Series Vb and VIb, except that we know Series VII is introduced while VI is still running.

Table 4 incidentally provides another insight – the disappearance of bankers marks from the obverse begins at a time in Series Va and VIa immediately *before* the Bold marks are introduced. This must tell a story - though we can only guess – perhaps that a new directive prohibiting defacing was strictly enforced as a prelude to the impending Bold marks.

## 7 Metallic composition

Several metallic analyses of punchmarked coins have been carried out in the past. Table 5 shows Gupta's summary of this work up to 1963 (Gupta 1963) and adds more recent analyses by Agrawal & Rai (1994) Ahmad & Prasad (1996), and Vijayan *et al* (2005). Percentages are rounded to the nearest full number.

Alloying is mentioned by Kautilya when he describes coins being manufactured with 'four parts copper', i.e. one quarter copper. From the superficial impression of the colour of the coins, debasement is least in Series I, becomes slightly noticeable on some coins in later series, but even the most debased coins in Series VI still have the appearance of silver. But colour is not a very reliable indicator, because it can be affected not only by the copper content but also by trace elements and burial conditions. Ahmad & Prasad found lead, zinc, iron and nickel in their analysis. Vijayan *et al*, in what appears to be a reliable analysis of seven coins, found consistently high trace elements of gold and lead, and in one coin iron and lead. The very high amounts of gold purported to have been found by Agrawal & Rai, (up to 65%) are not borne out by other studies, although trace gold at up to 9% as reported by Vijayan *et al* is quite interesting. It may indicate the refining methods in use over a wide time range (Series III to VIb) could not or did not extract the gold from the ore, although refinement by cupellation, which requires furnace heat to 1200°C, was well-known by this time in the West. There was no gold coinage in the Magadha-Mauryan period and gold ornaments are rare. Perhaps gold may not have been so highly prized in this region in the fifth to second centuries BC – another indication that the Gangetic region may have had little technological input from the Classical world during this period.

By the time of the *Arthashastra*, mints must have been carrying out a controlled refining of ores, to achieve the 'one quarter copper', although this may relate to a later date.

The presence of many other trace elements in Vijayan's analysis, primarily lead but also including arsenic, iron, tin, chromium, manganese, nickel, cobalt and yttrium, opens up a future opportunity to locate the source of the ore. Further metallic analysis of later Mauryan coins is needed before a full appraisal of its potential can be realised.

## 8 Restruck coins

The practice of restriking coins already circulating originated very early in the history of ancient Indian coinage: some of the pre-imperial *janapada* coins show clear signs of being restruck. Such coins are sometimes referred to as 'double obverse', because the original reverse, once blank or harbouring only bankers marks, becomes the new obverse (Fig. 12). Their importance for the chronological arrangement of types is paramount, as once it has been established which is the old and which the new obverse (a task usually made easy by the near obliteration of one by the other), the chronological relationship is beyond dispute.

| **Author** | **Series** | **% silver** | **%copper** | **comment** |
|---|---|---|---|---|
| Cunningham | Karshapana unspecified | 75-86 | - | 113 coins |
| Ramachandran | Series-I Golakhpur | 82 | 15 | |
| *Agrawal&Rai* | *III coin 216 GH305* | *25* | *16* | *Au 59%* |
| Vijayan*et al* | III IV var uncertain | 66 | 12 | Au 9.21 Pb 9.53 |
| Vijayan*et al* | III IV var uncertain | 77 | 7 | Au 5.5 Pb 4.8 |
| Ahmad & Prasad | III Type 305 | 72 | 29 | |
| Ahmad & Prasad | III Type 321 | 73 | 27.5 | |
| Prasad | III and IV | 72-80 | - | |
| Shreenivas | III-IV Karimnagar hoard | 76 | 23 | |
| Ahmad & Prasad | III Type 356 | 70 | 300 | |
| Vijayan*et al* | IVb (IV IX) var uncertain | 74 | 11 | Au 7.43 Pb 3.8 |
| Vijayan*et al* | IVd uncertain | 69 | 19 | Fe 4% Pb 4% |
| Vijayan*et al* | IVd (IV XXXI) | 77 | 4 | Au 8.96 Pb7.84 |
| Ahmad & Prasad | IVdType 415 | 70 | 30 | |
| *Agrawal&Rai* | *IVd coin 221 GH435* | *27* | *8* | *Au 65%* |
| Ahmad & Prasad | IVdType 442 | 76 | 24 | |
| Ahmad & Prasad | IVdType 450 | 74 | 26 | |
| Shreenivas | VI Karimnagar hoard | 68-79 | 20-28 | |
| Gairola | VI | 67 | 29 | |
| Walsh | Bhir Mound VI | 40 | - | |
| Vijayan*et al* | VIb 570 | 68 | 12 | Au 7.43 Pb9.78 |
| Vijayan*et al* | VIb ?574 | 77 | 7 | Au 5.53 Pb 4.82 |
| *Agrawal&Rai* | *VIb coins 7,34 Type 575* | *42* | *58* | |
| *Agrawal&Rai* | *VIb coin 28 GH542?* | *53* | - | *Mixed alloys* |
| *Agrawal&Rai* | *VIb coin 51 GH543?* | *18* | *82* | *Mixed alloys* |
| *Agrawal&Rai* | *VII coin 83 GH594?* | *36* | *64* | *Mixed alloys* |
| *Agrawal&Rai* | *VIb coin 107 Type 574* | *30* | *70* | |
| *Agrawal&Rai* | *VIb coin 149 Type?* | *55* | *45* | |
| *Agrawal&Rai* | *VIb coin 174 GH574* | *70* | *30* | |
| *Agrawal&Rai* | *VIb coin 188 GH570* | *90* | *10* | |
| *Agrawal&Rai* | *VIb coin 198 GH568* | *53* | *34* | *Au 13%* |
| *Agrawal&Rai* | *VIb? Coin 208 Type?* | *50* | *10* | *Au 40%* |

Table 5: Metallic analyses. The suspect values are italicised.

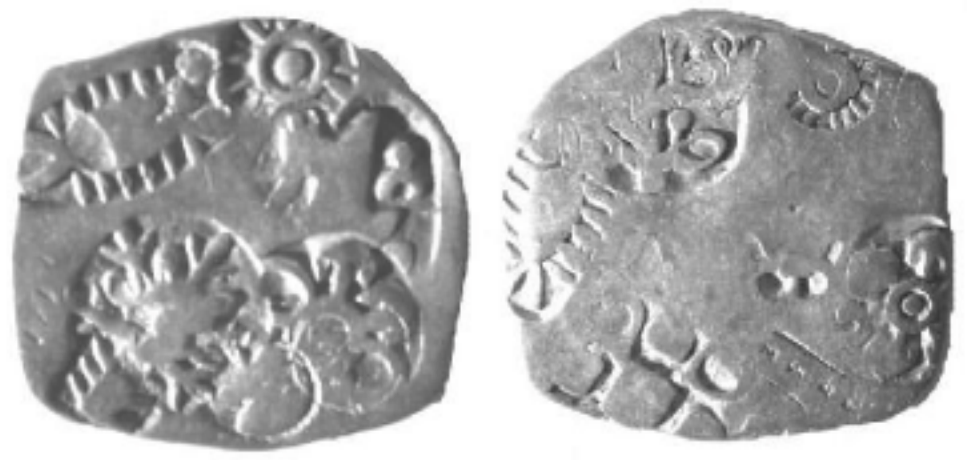


Fig: 12 Double Obverse coin showing Series III (Type 307, on the left) restruck on a coin of Series II (Type 268). The state of preservation indicates which is the newer type. x 1.5.

Ancient literature makes no mention of this practice, so we can only guess at its purpose, but scholars to date have assumed a political motive - the obliteration of a previous ruler's coinage. It is not now possible to attribute restriking to particular rulers, but the ancient literature indicates frequent strife amongst the ruling families of Magadha. The coins, however, reveal only two main restriking phases. The first is confined to Series I, and actually comprises at least three phases of restriking. The second main phase separates Series II (old obverses) from III and IVa which restrike them. In contradiction to the traditional assumption of political or dynastic motivation, evidence is offered here for at least some of the restriking in Series I being due to more mundane practical reasons. The restrikes of Series IVa isolate it from the rest of the Series (see below, in the Introduction to individual Series, where detailed analysis of the chronological implications of the restrikes is also given).

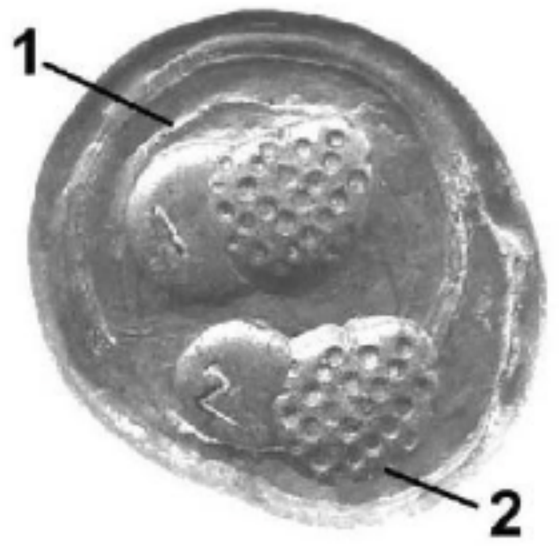


Fig. 13: Illustrating that overlapping marks do not indicate order of punching

A common belief in the analysis of double obverse coins (as well as normal coins) has been the perception that it is possible to tell the order of striking when marks overlap. Fig. 13 shows an experimental punchmarking carried out on a lead globule. Two punches were made, one plain, one with dots. In the top pair, the plain punch (labelled '1') was punched first, lightly. Then the dotted punch was punched heavily and partly overlapping. In the lower pair, the dotted punch (labelled '2') was punched first, heavily, and the plain punch was punched second, lightly. The results are the same in each case - it is not possible to tell which punch was used first, because the critical factor is how deeply the punches are impressed relative to one another. Overlapping marks are thus not a guide to order of punching.

## Absolute Dating of Magadha-Mauryan Coins

Under this heading all the evidence available for absolute dating of punchmarked coinage is examined: hoards containing datable Classical coins, the Buddhist literature, archaeology, stylistic considerations, comparison with other *janapada* coinages and the historical accounts of their annexation, and to some extent the different volumes of coinage issued in relation to the economic and political evolution of the Gangetic region.

### Fact and myth in Ancient Indian history

The period of the earliest Indian coinage straddles the prehistoric and historic eras, and such historical documentation as exists is therefore relevant to the story. Epics such as the *Ramayana* and *Mahabharata* originated in the eighth or ninth centuries BC and supply both religious and secular information, but the earliest written forms of these epics do not go back beyond the fourth century BC. By this time, Jain and Buddhist texts also began to appear, but they were often amended subsequently, over long periods. The motivation for recording historical events may well have been the desire for self-glorification by certain rulers, and the facts may have been distorted to suit political ends. The strong religious element in many of these texts perhaps stem from a desire by a Bronze Age/Iron Age priesthood to maintain a sense of awe and fear amongst the population, in order to maintain their own power.

Information about genealogy and chronology for this period comes from Jain, Buddhist and Brahmana literature, particularly those known as the *Puranas*, or lists of kings. They were composed over a lengthy period, the exact timespan of which is debated by scholars but may stretch from the fifth century BC until the tenth century AD. They probably started as an oral tradition and were only written down centuries later, and different works give

conflicting lists, thus making it difficult to be precise about the sequence or dates of rulers. Although they cannot be accepted as reliable in detail, they are still useful as a political commentary at a time when monarchy was being adopted in the Gangetic region.

The other main historical narrative, the *Arthashastra*, is a book of Mauryan statecraft, as described above in the historical introduction. It contains more detail about technical matters, for example relating to the minting of coins, but many of the terms used there are ambiguous.

The melting pot of written and artefactual information that makes this 'history' is unlikely to yield an accurate distillation of the period. The task of prioritisation of all this information – the artefacts from archaeological sites, the coins, and the ancient texts, is the challenge facing the historian. Of all these sources, numismatics perhaps places us in closest contact with the economic history of the proto-historic period, yet it has been the least exploited.

The absolute dating of the *karshapana* coinage is the task in hand for the numismatist. Unfortunately one of the main potential sources of information, archaeological site dating, has contributed little of substance because of poor recording of types from excavation and lack of precise C14 dates from the relevant strata. The tools available to help pin coinage to absolute dates include the few hoards that have been found together with datable Classical coins, the date of the life of the Buddha, and other factors discussed collectively below.

### Hoards containing Classical coins

The chief means of absolute dating should rest in the hoards of punchmarked coins that have been found together with datable Classical coins.

There are two hoards that have been interpreted as providing reasonably accurate dates for the earlier part of the period: the Chaman Hazouri hoard (Curiel & Schlumberger, 1953), and the 1924 Bhir Mound hoard from Taxila (Walsh 1939, Gupta 1950).

The Chaman Hazouri hoard, found in Kabul, contained eight Persian sigloi, fourteen Gandharan bent bars, 34 Athenian coins of the fifth century BC (one critical coin of 394/393 BC), 30 diverse Greek coins from the sixth-fifth centuries, and 29 of the new local punchmarked type on the 12 gram standard mentioned above ('Kabul Valley Coins') (Fig. 14). The date of burial cannot be before *c.*390 BC, but its *terminus post quem* cannot be tied down: it is assumed, because of the dated Athenian coin, to be close to 390BC. It shows that bent bars and the local Kabul Valley coins were in circulation by the burial date, yet no *karshapana* coins were present. This has been argued to support the assertion that the *karshapana* issues had barely begun by the end of the fourth century BC (Gupta 1963, 143-144), although we argue here that further research suggests a somewhat earlier date for their introduction. Debate has also focused on how far back in time the Chaman Hazouri coins might stretch (Cribb 2005). Because some of the Greek coins were over 100 years old, it is possible that the bent bars and Kabul Valley coins could also have been issued well before 390. Gupta (1963, 143) pointed out that the hoard was a deposit

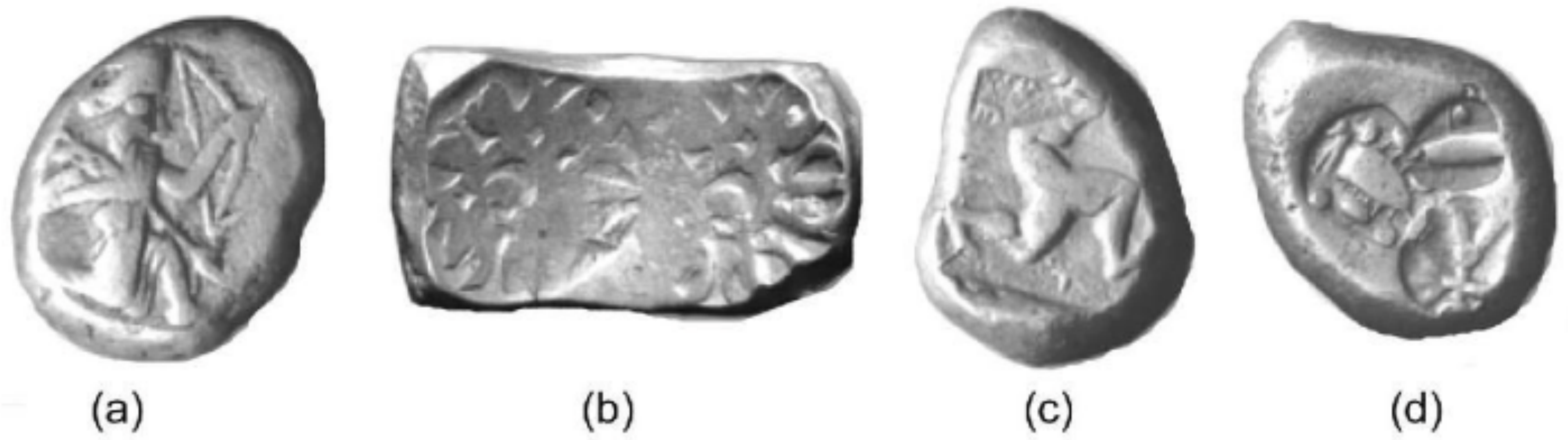

(a) (b) (c) (d)

Fig. 14: Examples of coins from the Chaman Hazouri hoard: (a) Achemenid siglos, (b) Gandharan bent bar, (c) Greek coin of Aspendos, (d) local punchmarked 'Kabul Valley' type (IIAS Newsletter March 2002, © Society for the Preservation of Afghanistan's heritage). x 1.5.

## How old are the earliest Punchmarked coins?

The earliest coins of Magadha (Series 0) appear from their weight, fabric, and typology to be amongst the earliest in the whole punchmarked series. There is however no direct evidence that the introduction of coinage into the Indian subcontinent preceded its invention in Asia Minor. Instead we have to rely on indirect evidence: when did the political and social development of the Gangetic region reach a point when life could not progress without a medium of exchange? Excavation of nucleated settlements such as Rajgir (Marshall 1905-6; Ghosh 1958) show that fortification of cities was proceeding in the fifth century BC, at a time when Northern Black Polished Ware pottery was in use. Such circumstances make for the creation of centralised state control, although evidence for a standing army comes less from archaeology than from the *Arthashastra* which states that the king must be able to head the army. Because of the uncertainty about the date of this document and the period to which it refers, we cannot conclude from it alone that Magadha in the sixth or fifth centuries possessed an army. However the change from *janapada* to imperial coinages and the distribution patterns of coin hoards that accompanies it (Maps 3 & 5) leaves little doubt that inter-state conquest had necessitated the creation of substantial armies by the late fifth century BC (adopting the 'short' chronology discussed below). The need to make payments to these troops in a medium more finely divisible than the traditional forms of currency such as cattle would seem to make a compelling case for the use of metallic currency. The implication stemming from these observations is that coinage must have been in use by the late fifth century BC, but it does not help to gauge the actual date of introduction.

Of all the ancient coinages, Classical or Oriental, only India uses the punchmarking technique in the longer term: the Classical world moves quickly from punches to dies. Additionally the symbols used for punchmarked coinage are unique to the subcontinent, not copied from the western Classical repertoire. Yet by the late sixth century coinage was already spreading rapidly in Europe and western Asia. If the Gangetic states had heard about the concept of metallic coinage from invaders, traders or travellers from the west, they certainly did not adopt its physical form or its weight systems when they began their own brand. At the same time it is unlikely that the early states of Northern India were entirely ignorant of the idea of money from the late sixth century BC, because the Persian emperor Darius, (532-486BC) whose darics and sigloi circulated widely in the Persian Empire and beyond, had already breached the mountain barrier that cut off the subcontinent from the west by invading Gandhara. According to Herodotus he had also sent a naval expedition to explore the Indus in 517BC. Account also has to be taken of the development of coinage in China at about the same time as its introduction in India. Here, things followed a very different course. Currency in the form of cowrie shells preceded a long series of cast base metal objects imitating spade or knife tools from around 500 BC. The total lack of similarity between the Chinese and Indian forms suggests they had independent origins, but the timing of their introduction is within 100 years of each other. There are, then, two likely possibilities, (a) that punchmarked coinage preceded the invention of coins in the West, or (b) that it proceeded independently at a later date, only borrowing the *concept* of coinage from western, or just possibly Chinese, sources. The economic, geographical, political and chronological considerations discussed here suggest that (b) is the most likely.

vault accumulated over an extended period, although that period is unlikely to be greater than the working life of an individual, say 25 years at the very most. The Chaman Hazouri hoard thus leaves open the possibility of dates pulling in two different directions – on the one hand a burial date perhaps rather later than 390 BC and on the other a date of issue of some of its contents considerably earlier than the burial date. The 'middle path' of these extremes would bring us back to *c.*390 BC, but the important point is that the hoard does not provide a safe, accurate date. It merely offers information that there were two local coinages of early style – bent bars and Kabul Valley coins – in use in the second half of the fifth century BC, possibly predating other punchmarked coinages from the Gangetic region. But because of the 1500km gap between these areas and the Gangetic states, it is possible that no Gangetic coins had found their way into this hoard even though they were in existence, so we cannot even draw specific conclusions about the date of origin of Magadhan coinage from it. We may only surmise that the second half of the fifth century BC may be about the time when coinage was first in use in Gandhara, and that it is unlikely that coinage in the Gangetic *janapadas* would have begun very many years earlier, otherwise some might be expected at Chaman Hazouri. Cribb's (2005) argument that the coin types present in the Chaman Hazouri hoard predate the Gangetic punchmarked coinages is not impossible but the weight of research presented here does not support it.

The other date is fixed from the 1924 Bhir Mound hoard from Taxila (sometimes called the 'Big Bhir Hoard') of punchmarked coins. This hoard contained about 1167 punchmarked coins together with one bent bar, and coins of Alexander the Great and Philip Arridaeus (323-317 BC). It could thus not have been deposited much before 320 BC, and the fresh punchmarked coins in it belonged to Series Va. Most scholars agree that this suggests that Series Va roughly coincides with the accession of Chandragupta Maurya.

However this view has been challenged by Errington (2003). From a comprehensive study of over 30 hoards both published and unpublished, Errington's main conclusion on absolute dating was that the start of Series III comes at the later date of *c.*321BC and is a consequence of the expansion of the Imperial territories known to have been undertaken by Chandragupta Maurya. Errington incidentally argues that this later date would help even out a problem that was raised in the first edition of this work, namely the estimated rates of issue of different types from Series I to Series VII. The chronology proposed in the first edition resulted in a rate of issue of types at 3.81 per year in Series I, slowing steadily to 0.8 in Series V-VII. Errington argues that one might expect the expansion of empire to result in the expansion of coinage issues. There is a confusion here between the rate of issue of different *types* and the rate of issue of *coins*. It is clear from the commonness of many later types, and the super abundance of Series V and VI coins in comparison to earlier Series, that they were issued in huge numbers – the rate of types may have been lower, but the volume of coinage was manifestly far greater. So the declining rate of issue of types probably has little or no bearing on the volume of coinage issued in the Mauryan period. Set against the backdrop of the dramatic growth in trade and industry that surely accompanied the transition from local to Imperial polity, it is unlikely that the numbers of coins surviving today are wholly the consequence of events (such as remelting/recoining at the end of Series I, or high burial rates at times of turmoil) that would distort their reflection of the actual numbers produced. Notwithstanding that these events did occur, (and we can pinpoint some of the specific remelting episodes) it is probable that the numbers of coins of the different Series seen today are a broad reflection of the numbers issued.

## Dr. Gupta's view on the dates of punchmarked coinage

A systematic publication on the early *Janapada* coinages was still in preparation by P.L. Gupta at the time of his death, but in 1994 he had already published what was to be his final opinion on the pre-*karshapana* coinage of Magadha *Janapada* (ND 1994, 1-18). He divided them into four classes, which he termed "Types". Coins of Type I have been shown to be modern forgeries (Hardaker 1996), but the other three types comprise genuine coins which are all included in Series 0 in the present catalogue. In this article, Gupta also included "Types V and VI", which relate to the later *karshapana* Series I to VII here. His detailed views on the coinage of Series I can be found in the Introduction to Series I in the Catalogue section below.

In his argument Gupta made it clear that he still subscribed to the 'long chronology' for the Buddha, and placed the death of Ajatasatru at 522BC. He believed that his Type IV (Series 0) was issued from this date, and that Types 1-III were thus even earlier. The reader is recommended to refer to this article to follow the reasoning. (See also under Series 0 in the catalogue section.)

Apart from this, Errington's dating is incompatible with our 'firm date' from the Bhir (1924) hoard. Errington argues that because no other Taxila hoard terminates at the start of Series Va, the data from the Big Bhir hoard must somehow lose its validity. But the other Taxila hoards were simply buried much later; that does not detract from the information gleaned from one hoard that was buried at the start of Series V. We therefore hold to the view that the Big Bhir hoard is crucial in establishing that Series Va was just beginning around 320 BC.

## Date of the Buddha and its relevance to punchmarked coinage

The Buddha lived in Magadha at the time when punchmarked coins were circulating, thus his dates have direct relevance to numismatics. This subject has in recent years come under renewed discussion. The most detailed study, by Heinz Bechert, (Bechert 1991-7) concluded that the traditional date for the death of the Buddha, 486 BC, which is based on the Singhalese chronicles, is too early. Although he could not pinpoint a date, his best estimate was between 400 and 350 BC. The consensus according to Cousins (Cousins 1996) is for a date of 400 BC plus or minus 20 years. This so-called 'short chronology' substantially affects the dating of the punchmarked coinage. Buddha lived in the time of Bimbisasa and Ajatasatru, when Magadha was becoming an imperial power, and the *karshapana* coinage was establishing itself as medium of exchange in a wide area of northern India. Historians have concluded that the Singhalese chronicles placed the reigns of Bimbisara and Ajatasatru too early, thus making it appear that the Buddha lived earlier than he really did.

The dating is calculated on the following lines: The Singhalese and Sarvaastivaada documents give time lapses of between 116 and 218 years between the death of the Buddha and the date of the coronation of Asoka (approximately 268 BC). This would offer dates between 486 and 384 BC for the Buddha's death. The Buddha is said to have died in the eighth year of the reign of Ajatasatru. If we take the consensus date – 400 BC – as the approximate date of the Buddha's death, that would give the date of Ajatasatru's accession at 408 BC. Prior to this, the reign of Bimbisara, according to the *Puranas*, was 52 years; the reign of Ajatasatru was 30 years. If these dates are accepted literally the time span of these two rulers would be 82 years, falling perhaps in the period 460-378 BC. But between this date and the accession of Chandragupta Maurya about 321 BC there would then be a mere 57 years to fit in all the other *puranic* rulers, including the Sisunagas and nine rulers of the Nanda dynasty. More likely the combined regnal period for Bimbisara and Ajatasatru is far less than 82 years. In an age where life expectancy was short, 20 years in power would be a long time. Those who believe that the *puranic* lists are close to the truth would not be able to accept the 'short chronology' hypothesis.

## Other factors relevant to absolute dating

There is another 'key' event that may help the dating of the coins: the foundation of the city of Pataliputra, modern Patna, in the heart of the Magadhan kingdom. Ajatasatru is said to have built a fort at this site, but the transfer of the capital from Rajgir to Pataliputra, according to the *Parisishtaparavan* of Hemchandra, was accomplished by Udayin, one of Ajatasatru's successors.

The importance of this event derives from a statement in the *Attakatha* that "In the city of Rajgir a coin of 20 *mashakas* was prevalent and the five *mashaka* coin was its *pada* (quarter)". A coin of 20 *mashakas* would weigh 4.36 grams. Although the coins of Series 0 are all heavier than this (4.6 grams being the lightest), it is clear that the coinage being referred to in Rajgir is not the *karshapana* of 3.4 grams However, this does not necessarily mean that the *karshapana* was never issued at Rajgir. It only tells us that a coinage of 20 *mashakas* was in progress in Rajgir presumably while it was the capital.

It is not easy to put dates to these events. Firstly the date of Udayin needs to be placed. Taking our 'median date' for the accession of Ajatasatru at 408 BC and allowing a compressed regnal period of 15 years would give his death at 393 BC. Udayin may have been the direct successor of Ajatasatru or he may have followed Darsaka, but in any event it is likely that he ruled in the first quarter of the fourth century so that would be the date when Pataliputra became the capital.

The Golakhpur hoard of early Series I coins came from Pataliputra. Unless there was a mint here before it became the capital, this find suggests that early Series I may be the first coinage of Pataliputra. That would augment the case for Series I being in progress in the first quarter of the fourth century, although that does not fit with some of the further evidence below.

The date of the coinage of Kosala relative to that of Magadha also has relevance. The state of Kosala was annexed by Magadha before the death of Ajatasatru, i.e. a few years before 393 BC (using the 'short' chronology for the Buddha as described here). At this time its coinage is assumed to have ceased. It has been shown (Hardaker 1992, 8) that Kosala's coinage was in its final (but long) Series 3 at the time when Magadha began Series I. Therefore the latter must have been in progress prior to about 393 BC, and perhaps up to a couple of decades before, because both Series I of Magadha and Series 3 of Kosala are large issues.

Finally, the coins of Series 0 and I are found in the general region of the Magadhan homeland, but interestingly it is Series 0 that occupies what is considered to be the original heartland of Magadha (Map 5).Series I is clustered further west in the Kashi (Varanasi) area. Kashi was ultimately annexed by Magadha (although it may briefly have been under Kosalan control). These territorial changes predate the emergence of the Imperial period in the early fourth century BC.

A different technique was used in the first edition of this book to test the reliability of these 'dates'. It measured the annual rates of issue of types within certain time brackets and compared them, in the expectation that rates of issue might not vary very much through time. It turned out that this was not the case: once the *karshapana* had been introduced, the rate of types issued was far faster at the beginning (in Series I), after which it steadily tailed off. As we have seen above, this has been taken by Errington (2003) to indicate that the absolute dating proposed needs to be telescoped in the later period of *karshapana* coinage. That seems unlikely for the following reasons:

Many more new types have been discovered since the first edition, especially in Series I, which now has 505 types whereas there are only 402 in the whole of Series II to VII. Clearly, the issue of Series I types cannot have been at the same rate as in Series II to VII otherwise Series I would have lasted considerably longer than the rest of the *karshapana* coinage put together. This is proof enough that circumstances in Series I necessitated a much greater rate of issue of types, most of which were of small numbers and short duration. In other words, we cannot deduce anything about time from the rate of issue of types alone.

Secondly, the telescoping of dates proposed by Errington would do nothing to account for the remarkable number of types in Series I. Placing the start of Series III at 320BC would still result in a rate if issue of types at over 6 per year up to this date and about 2.5 thereafter. Errington's proposal was made without the benefit of the knowledge of all these new types, and was a reasonable hypothesis given the data then available.

Despite the evidence that Series I coinage was withdrawn at some time around the introduction of Series II, which may mean that surviving examples are fewer than they would otherwise be, it has already been mentioned that the volume of coinage and the volume of types are two quite different factors not operating in tandem. What did grow in step was the volume of coinage and the growth of the Imperial domains, together with the additional trading that accompanied it; indeed the coinage here has a clear message about the increase in commerce that took place from the time of Ajatasatru. In this respect the coinage reveals three fairly distinct phases of growth – low volume issues in Series I before conquest began, moderate volume in Series II to IV under the Sisunaga and Nanda dynasties, and high volume under the Mauryans.

## A concensus?

Tables 6 and 7 show the long and short chronologies with the numismatic events from Series I to VII.

| **Long Chronology Time Chart** dates in *italics* are hypothetical | | | | |
|---|---|---|---|---|
| **Date** | **Political Event** | **Numismatic Event** | **No of types** | **Years** |
| *540* | Bimbisara | Series 0 | 29 | 20? |
| *492* | Ajatasatru accession | Series 1 | 505 | 92 |
| *486* | Buddha's death | | | |
| *450* | Capital moves to Pataliputra | | | |
| *400* | Nanda dynasty | Series I/II-IV | 265 | 79 |
| 321 | Accession of Chandragupta Maurya | Series Va & Vb | 57 | 50 |
| 297 | Accession of Bindusara | | | |
| 272 | Accession of Asoka | Series VIa VIb & VII | 80 | 97 |
| 232 | Death of Asoka | | | |
| *175 on* | End of Mauryan Empire | End of silver punchmarked coins<br>Series VIII | | |

Table 6: Long chronological time chart for punchmarked coins

| **Short Chronology Time Chart** dates in *italics* are hypothetical | | | | |
|---|---|---|---|---|
| **Date** | **Political Event** | **Numismatic Event** | **No of types** | **Years** |
| *430* | Bimbisara | Series 0 | 29 | 20? |
| *408* | Ajatasatru accession | Series 1 | 505 | 38 |
| *400* | Buddha's death | | | |
| *380* | Capital moves to Pataliputra | | | |
| *370* | Nanda dynasty | Series I/II-IV | 265 | 49 |
| 321 | Accession of Chandragupta Maurya | Series Va & VIa | 57 | 50 |
| 297 | Accession of Bindusara | | | |
| 272 | Accession of Asoka | Series Vb VIb & VII | 80 | 97 |
| 232 | Death of Asoka | | | |
| *175 on* | End of Mauryan Empire | End of silver punchmarked coins<br>Series VIII | | |

Table 7: Short chronological time chart for punchmarked coins

The weight of scholarly opinion, following Bechert's study, is to accept the 'short chronology'. However in numismatic terms this presents an uncomfortable situation where the 505 types of Series I would be produced in a period of less than 40 years. As we have seen, the Sisunaga and Nanda dynastic period is already quite crowded with types, so there is therefore some justification for extending the origin of Gangetic coinage back into the middle of the fifth century.

If this is correct, the origin of coinage in the Ganga region would probably predate the early coins from the Chaman Hazouri hoard, and the information about 20 *mashaka* coins being current in Rajgir would relate to the time before 430 BC. We would also be forced to accept that coinage of Series I in Pataliputra was nearing its end before the city became the capital.

If these options leave the reader with no clear impression of the date of early Magadhan coinage, that is because it would be wrong to try to distil one from the confused evidence. The historical data upon which dates are constructed may themselves be inaccurate and are certainly conflicting, but at least the numismatic evidence is there for all to see. It is clear that Magadha's coinage began with a short series of tentative issues followed by the Series I coinage which was very extensive at least in its types, but perhaps not in its abundance. On balance it is unlikely to have originated later than about 430 BC, but this date could be somewhat earlier.

Because of these uncertainties there are very few cases where coins can be ascribed to particular rulers. Adopting the short chronology would place Series 0 and I in the time of Bimbisara and Ajatasatru, and Series Va and VIa at the start of Chandragupta'a reign. Series Vb, VIb and VII would then fall party or wholly in the reigns of Bindusara and Asoka.

## Regional Evidence from Hoards

Throughout the *karshapana* coinage, a pattern is seen of 'streams' of issues that appear to share style, orderly classes and groups, careful manufacture and wide circulation. They are punctuated by smaller issues that do not conform to these supposed norms but exhibit some deviant characteristics, such as sloppy craftsmanship and manufacture, use of unusual motifs, debased metal, limited range of fifth marks in a sequence, frequency of overstriking, and sometimes localised findspots. While the mainstream issues might be taken to represent a coinage that circulated throughout the imperial domain, the non-conforming issues suggest that there were occasionally some special regions or mints that somehow escaped the rigorous controls of the central authority. We should make no mistake about the power of this central authority to enforce rigid standards over the great majority of mint operations for most of the time, which enables us more easily to detect those few issues that are radical. At this distance in time it is a challenge to assess if these are manifestations of discontent at the margins of society, attempts at political breakaway, or simply stem from inadequate training and resources in a provincial mint. Of course in the formative years, and upon the collapse of *karshapana* coinage, such irregularities are to be expected, but their occurrence in the middle period is of greater interest.

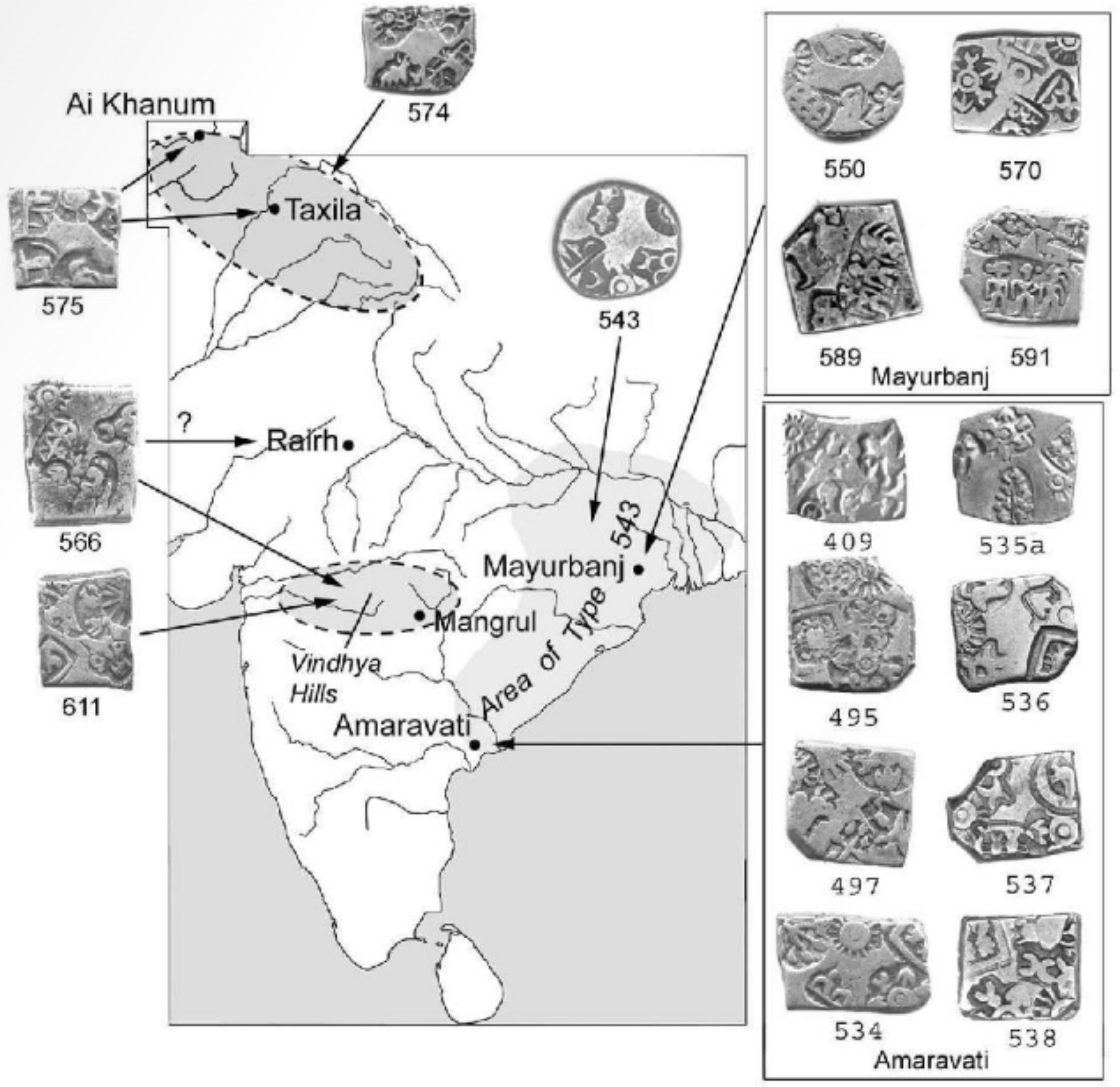
In Series I they are seen in the 'donkey-rider' coins (I XIII), the 'monkey' coins (I XXXVIII) and the overstruck coins (I VIII, I XII, I XIII). These are discussed fully in the Introduction to Series I in the Catalogue section. Examples also occur in the transitional Series I/II, and occasionally throughout the whole of Series II - VII. Certain rare solitary types in Series III and IV may also represent localised deviation, such as Types 333, 334, or 367-375.

Towards the latter end of the *karshapana* coinage, some large hoards show particular concentrations of certain types, giving rise to speculation that they may be the issues of mints near by. Examples were given by Gupta (1963) and further examples were recorded by Errington (2003). These are plotted on Map 4. However most hoards of any size contain a thorough mix of types that betray a continent-wide trade over an extended period. Unfortunately there is no historical information about the location of mints.

Large numbers of a particular type in a hoard may represent a local mint but in some cases such as the Rairh III hoard it is suspected that selective collecting is the reason. The proximity of Rairh to the more likely homeland of Type 566 in the Vindhya Hills did not result in many occurring in the other four hoards from the Rairh excavations. Type 566, one of the latest issues of silver *karshapanas*, is present widely in the subcontinent, but it is intensively imitated in Series VIII in finds from the Vindhya Hills region. Thus it is suspected as having had its place of issue there, possibly not long before the Sungas established hegemony in the region.

The clearest evidence for regionalisation relates to late types such as 574 and 575 which seem to occur in high numbers in a large area of the northwest. Type 574 is a very large issue and so spreads throughout the Gangetic region as well, but its greatest concentration is in hoards such as Mir Zakah II (38%), Peshawar (36%) and Attock (Allan 1936).

Two hoards from Bangladesh in the far east of the punchmarked region (Mahasthan and Baigacchа) have given rise to speculation that Type 481 is a local issue (Errington 2003, 76). These coins are certainly local, but there is a confusion here between the original Type 481 which is an imperial Mauryan issue, and later local imitations of it such as occur in these hoards; they are discussed more fully under the section of contemporary forgeries.



Map 4: Some possible localised types from Series IVd on. Those represented in the Amaravati hoard are based on Gupta's assessment. Type 574 is common throughout the northwest. Type 566 was abundant in the Rairh III hoard but is also a very common type elsewhere, especially in the Vidisha region.

# Punchmarked Iconography

The persistent use of multiple stamps sets the punchmarked coinage apart from all other ancient coinages, and as we have seen it implies a geographic isolation at least during the early years of coinage in the Gangetic region.

For trade to function, it may seem unnecessary to have anything more on a coin than the mark of authenticity of the issuing state, guaranteeing its fineness and weight. The multiple iconography on punchmarked coins offers a chance for insight into the functioning of the Magadha-Mauryan state.

Punchmarked coins also differ from contemporary coinages in Europe in their lack of inscriptions, implying that literacy was not widespread, and the absence of individualisation of the human figure. The numerous symbols may be regarded as pictographs not unlike the hieroglyphics of ancient Egypt.

## The meaning of the symbols

The marks would not have been placed on the coinage and changed so frequently unless the issuing authority believed that some section of the public at least needed to know their message. Once again comparison with Classical coinage is instructive: the coin types of the Greek city states, such as the Athenian owl, often remained constant over long periods. On these coins, small changes to detail, such as the control marks signifying the mint or a mint official, were usually 'introspective': the public did not need to know their meaning to be able to spend the money, but the mint chose to record it, perhaps for some kind of monitoring process. In contrast, on the punchmarked coinage the iconography was in a continual state of metamorphosis. It would appear that a kind of slow-motion running commentary was being played out – which might have been a political/propaganda message or a practical one, or both.

It is generally believed that the stamp of state authority must be embodied in at least one of the symbols. From the earliest Series 0 coins it is now clear, as mentioned by Mitchiner (2004, 815), that the symbol we originally labelled as 'first', the sun, is probably not the original signature mark of the state of Magadha. The six-armed symbol, which is placed centrally on pre-*karshapana* coins, first alone then in conjunction with the sun, is more likely to be the original mark intended to indicate Magadhan state authority. Whether it also doubles as a mintmark is examined below.

In the Catalogue therefore, the sun now takes second place to the six-armed symbol. The sun remains constant, with only minor variation, throughout all Magadha-Mauryan coinage until Series VI. It must relate to some subject that had long-term continuity. Indian society at this stage was not alone in worshipping the sun as the lifeblood of civilisation: together with rain, it sustained the agrarian society. In the prehistoric tradition of nature worship, it may be that acknowledgement of this was considered appropriate on the coinage, although if so it is interesting that this act comes as an afterthought following the earliest issues in Series 0 that place the six-armed symbol alone on the coinage.

The variations in the six-armed symbol cannot represent personal badges such as those of a king or mint official, because some recur over wide timespans (Table 9 below). Indeed, if the coinage at this time was the prerogative of an individual, there is no obvious signal to show this. Mitchiner (1973, 16; 2004, 827, 830) has speculated that the six-armed symbol may be a mint signature, which was needed so that defective coins could be returned to the issuing mint. Although an attractive idea, the evidence is at best feeble – close study of the interchangibility and recurrence of symbols does not support it. Certainly it cannot be the case that each six-armed symbol represents a separate mint, because that would mean the existence of about 100 different mints. Recognition of the function of the third, fourth and fifth marks is even more speculative. Numismatists have been reduced to little more than guesswork.

A distinction may be necessary between recognition of the objects depicted (in many cases easily identified but in others quite baffling), and recognition of the meaning they were intended to convey. Identifying the bull symbol on a coin is easy, but its symbolism is now lost to us, aside from its enduring status in Hindu religion. But this is no different from the symbolic heraldry on modern coins. Without insider knowledge, nobody would know what the Asokan lions on recent Indian coins symbolise.

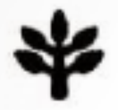
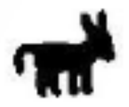
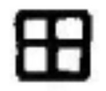
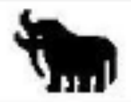
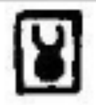
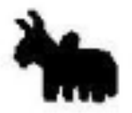
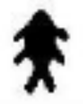
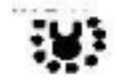
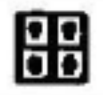
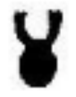
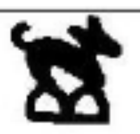
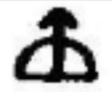
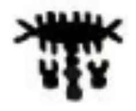
Scholars in the past have speculated about the association of certain marks with the Mauryan dynasty. Gupta (1963, 152) pointed out that the three-arched hill occurs on numerous Mauryan artefacts including a metallic bolt that was used to attach the 'bull' capital to the polished monolith containing Asoka's Edicts from Rampurva. This suggests it may be a royal mark, but it is not the exclusive mark of Asoka because it continues to occur on tribal coinage of post-Mauryan date.

Durga Prasad (1937) also argued for the arches and crescent mark being 'Mauryan' on the basis of its occurrence on four objects – the Rampurva pillar, the Sohgaura copper plate, the base of a pillar excavated at Kumrahar in Patna by D.B. Spooner in the 1920s, and a seal impression stamped at the base of some terracotta vessels unearthed at Bulandibagh in Patna. In Prasad's view all these are evidently 'Mauryan' objects and so the occurrence of the arches and crescent mark in association with them backs the theory that it was a 'Mauryan dynastic emblem'. The fact that this mark appears on artefacts of alleged Mauryan age as well as on coinage does not quite amount to proof of it being a dynastic emblem. What it does show is that coins with this mark are probably contemporary with the other artefacts that bear them. Yet even this may not always be the case, as the same arches and crescent mark recurs on later dynastic coinages of the Satavahanas and Western Ksatrapas. Thus attempts to link symbols with dynastic emblems need to be made with care.

In the analysis of punchmarked symbols that follows, three criteria are considered: (a) perceived position in the five mark sequence and interchangeability in this respect, (b) duration of individual symbols and recurrence in more than one Series, and (c) the subject matter of the symbols.

## (a) Symbol position and interchangeability

Was each individual mark always intended to have the same place in the sequence of five? Regardless of the order we may place them in today, each mark may have had a separate function, which we term 'first', 'second, etc. for convenience. (The position of a symbol in the sequence is referred to as its 'function'.) As shown above the sun and six-armed symbols do appear to have discrete functions. But does this also apply to the other three marks? The classification adopted here is based on the assumption that if one of the three is seen to remain constant while the other two vary, the constant one has the function of Class (third) mark, and the variable one becomes the Group (fourth) mark. Likewise when the fourth remains constant with varying fifth marks, those marks are deemed to be fifth marks whenever they occur on a coin. When this hypothesis is tested for all third, fourth and fifth marks in Series I –VII, (446 marks), it is found to be valid on all but nineteen cases. (The very early coins in Series I are excluded; it appears that the policy of fixed functionality had not gelled at this time.) Additionally it is sometimes unavoidable in the Catalogue to allow a fourth symbol to remain constant when a third varies, for example on Types 474 and 474a. Although the hypothesis is almost always valid, the exceptions are worth closer examination (Table 8). The comments in Group A of the table offer mitigation for some of the crossovers in function position, but there remain a few instances with no satisfactory explanation. In a complex and long-running sequence the presence of a few non-conforming cases would be expected.

| **Group A: Marks whose functions probably altered unintentionally** | | | | | |
|---|---|---|---|---|---|
| **Mk No.** | **MARK** | **SEEN ON COIN TYPES AS** | | | **COMMENT** |
| | | **$3^{rd}$ Mark** | **$4^{th}$ Mark** | **$5^{th}$ Mark** | |
| 9 |  | | IVd 476d | *III 294, 304, 310, 314a, 326a, IVb 366, 380, IVc 386, 389, 397, 397a, IVd 422, 422a, 440, 449, Va 492.* | Type 476d is clearly the odd one out; the mark is quite clear yet the coin also has an elephant right which is never seen as a fourth mark. This unique coin may be an example of the use of an error punch. |
| 19 & 19a |  | Va 489 -91 | | Va 496a, 498, VIa 528, Vlb 545 | Possibly more than 2 variants of 19/19a; complete examples of all variants are not available. |
| 20 |  | I 37-8 | VIa 531-2 | *Va 506, Vlb 547* | 1 37-8 widely separated in time; both types in VIa are not clearly struck |
| 36 |  | I 1-7 | | *I 99, 109, 115, 132, 231* | As 3rd mark only on very early coins whose 5th marks are absent or doubtful |
| 41 |  | | I 78-81 | I 174 | Possibly two different marks: only known example of Type 174 (BMC) is incomplete |
| 46 |  | 1 15-17, IVb 376-378 | *I 196-204, 257* | I 70, 77 | I 15-17 and 70, 77 early coins with unusual style bulls; IVb 376-8 could have bull as 4th mark but would thereby break class IV XX into three separate classes |
| 57 |  | II 283, IVb 374 | | I 12 | I 12 an isolated early instance probably forgotten in later years |
| 58 | | | *I, II, IV, V, VI* (numerous) | I 59, 241 | Bull as 5th mark is restricted to two types in Series I; both types show normal style bulls and could be mint errors or an unexplained use of this mark out of sequence in the early period of coinage |
| 69 | | | I 147 | I 38 | Possibly two different marks; 38 may have adjunct symbols |
| 70 |  | | *I 72-7, 86-89, II 270* | 1 65 | I 65 possibly a mint error |
| 95 |  | *1 39-65* | | IV 432 | 432 possibly used unaware that the same mark was used early in Series I |
| 167 |  | I 8, 96-101 | I 119-123 | | I 8 an irregular coin with only three marks; 96-101 should possibly be placed as 4th thus splitting class I XIV into two classes |
| 268 |  | IVd 474 | VIa 529-530 | | The form of the symbol on Type 474 is tentative as the area below the arches is off flan on both known examples |
| 283 |  | *I 115e-134d, II 285* | I 36f- 36h | I 3, 4, | 3, 4 very early; 36f-36h appear to be hybrid types combining two 3rd marks |
| 317 |  | *III 314, 314a* | IVd 463a | | On 463a the third mark is a bull on two arches, but this unique mark might be the true fourth mark and thus mark 317 would always be a third mark |

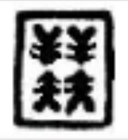
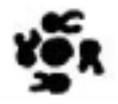
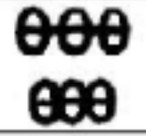
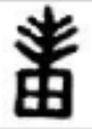
| **Group B: Marks showing an intentional change of function** | | | | |
|---|---|---|---|---|
| **MK No.** | **MARK** | **SEEN ON COIN TYPES AS** | | **CHANGE OF FUNCTION FROM** |
| | | **5th MARK** | **4th MARK** | |
| 13 |  | IVb, c, d, (numerous) | Va 488, VIa 527, 534 - 537, VII 592 | 5th to 4th mark |
| 14 |  | IVd 401, 414, 426, 470, Va 479, 502 | Va 492 -494, Vb 518-519, 520-523 | 5th to 4th mark |
| 15 |  | IVd 402, 415, 427, 458, Va 480 | Va 505, 507 -509, Vb 510-515, Vlb 547-567 | 5th to 4th mark |
| 16 |  | IVd 471, Va 496, 499, Vb 526 | VIb 576-582 | 5th to 4th mark |

Table 8: Marks occurring in more than one Function. Where appropriate, the normal function is in *italics* in Group A

In Group B, all four marks move from fifth to fourth function, implying that this was a deliberate mint policy. In summary, we can discern a long-term rule that marks had fixed that 'functions' but for unknown reasons this rule was occasionally broken.

## (b) Duration and recurrence

While a few marks, such as the sun, six-armed symbol, bull right, or elephant right, occur almost throughout the whole timespan of the coinage, most others only occur once or have a limited recurrence in one Series or in adjacent Series. If marks can be seen recurring over a very long period of time, such as would outlive the duration of office of any individual, that will in effect disprove the hypothesis that marks represent the badges of individual personalities. In Table 9 the 'lives' of all marks that recur in more than one Series is shown.

It demonstrates that such recurrent marks are not used at random, but rather have a particular life span before and after which they are never seen. This is most strongly developed amongst the fifth marks. Each Series has a small group of fifth marks that are used in several, or most, classes in that Series. The following Series inherits some, discards others, and introduces some new ones of its own. The fifth marks with these 'extended lives' form a fairly distinct group in contrast to those which appear only in one Series, or often just on one type. Within those with extended lives there may be a further division between marks that recur in two consecutive Series or Sub-series, and those which recur over even longer periods of time. We may thus perceive three classes of mark – 'short-life marks' (limited to one Series), 'extended-life marks' (occurring in two consecutive Series only) and 'long-life marks' (occurring in two non-consecutive Series or more than two Series, assuming the later

Series group into chronological units as Va/Vb and VIa/VIb/VII). In this definition, 'long-life marks' would extend over a time-span almost certainly too long to represent the personal signature of any individual. This hypothesis may be over-complex, but tabulating the results (Table 9) enables true long-life marks to be picked out. It turns out that there are only 13 marks (plus eight six-armed symbols) that belong in the long-life category as thus defined.

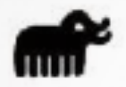
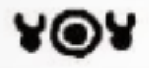
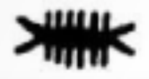
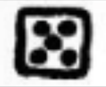
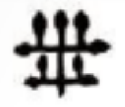
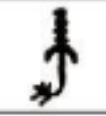
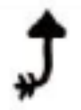
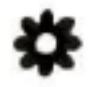
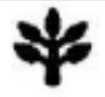
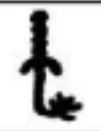
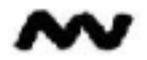
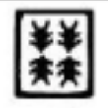
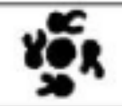
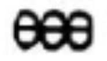
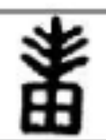
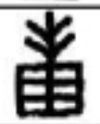
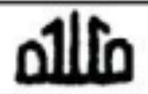
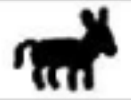
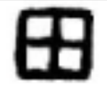
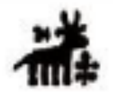
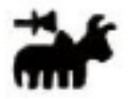
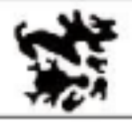
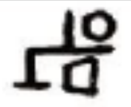
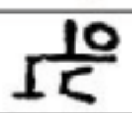
| MARK No. | MARK | SERIES IN WHICH MARK OCCURS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *FIFTH MARKS* | | I | II | III | IVa | IVb | IVc | IVd | Va | VIa | Vb | VIb | VII |
| 1 |  | ━ | ━ | ━ | ━ | ━ | ━ | ━ | ━ | | | ━ | |
| 2 |  | ━ | ━ | ━ | ━ | ━ | | ━ | ━ | | | | |
| 3 |  | ━ | ━ | ━ | ━ | ━ | | ━ | | | | | |
| 4 |  | ━ | ━ | ━ | ━ | | | | | | | | |
| 5 |  | | | ━ | ━ | ━ | | ━ | ━ | | | | |
| 6 |  | | | — | | — | | — | | | | | |
| 7 |  | | | — | — | — | | — | | | | | |
| 8 |  | | | — | — | | | | | | | | |
| 9 |  | | | ━ | | ━ | ━ | ━ | ━ | | | | |
| 10 |  | | | — | — | — | | — | | | | | |
| 12 |  | | | — | — | — | | — | | | | | |
| 13 |  | | | | | ━ | ━ | ━ | ━ | ━ | | | ━ |
| 14 |  | | | | | | | ━ | ━ | | ━ | | ━ |
| 15 |  | | | | | | | — | — | | — | — | |
| 16 |  | | | | | | | ━ | ━ | | ━ | ━ | ━ |
| 17 |  | | | | | | | — | — | | | | |
| 18 |  | | | | | | | | — | | | — | — |
| 19/19a |  | | | | | | | | — | — | | — | |
| 20 |  | ━ | | | | | | | ━ | ━ | | ━ | |
| 21 |  | | | | | | | | — | | — | — | |
| 22 |  | | | | | | | | | — | | | — |
| 23 |  | | | | | | | | | | | — | — |
| 24 |  | | | | | | | | | | | — | — |
| 25 |  | | | | | | | | | | | — | — |

Table 9: Marks occurring in more than one Series. Thick bars ━ indicate a long-life mark

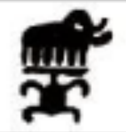
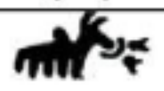
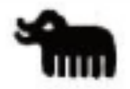
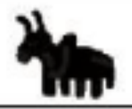
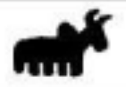
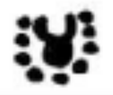
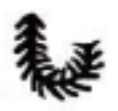
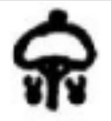
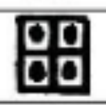
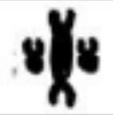
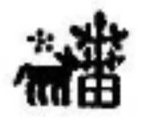
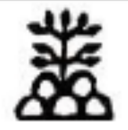
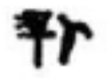
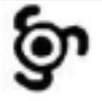
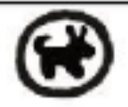
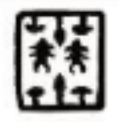
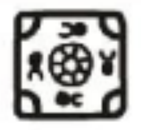
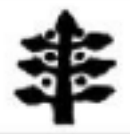
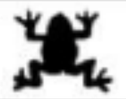
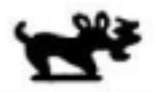
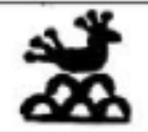
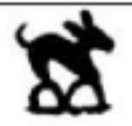
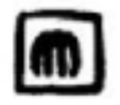
| MARK No. | MARK | SERIES IN WHICH MARK OCCURS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *FIFTH MARKS* | | I | II | III | IVa | IVb | IVc | IVd | Va | VIa | Vb | VIb | VII |
| 26 |  | | | | | | | | | | | — | — |
| 27 |  | | | | | | | | | | | — | — |
| 36 |  | — | | — | | | | | | | | | |
| 46 |  | — | | | | — | — | — | | | | | |
| 58 |  | ━ | ━ | | ━ | ━ | ━ | ━ | ━ | | | ━ | |
| 70 |  | — | — | | | | | | | | | | |
| 79 |  | | | — | | | — | | | | | | |
| 90 |  | | | | — | | | — | | | | | |
| 95 |  | — | | | | | | — | | | | | |
| 107 |  | | | | | | | | — | | — | | |
| 109 |  | | | | | | | | — | | — | | |
| 115 |  | | | | | | | | — | — | | — | |
| 128 |  | | | | | | | | | | | — | — |
| 140 |  | | | | | | | | | | | — | — |
| *FOURTH MARKS* | | | | | | | | | | | | | |
| 192 |  | — | | | — | | | | | | | | |
| 194 |  | | — | | | — | | | | | | | |
| 210 |  | | — | | — | | | | | | | | |
| 218 |  | | | | — | | | — | | | | | |
| 233 |  | | | | | — | | — | | | | | |
| 253 |  | | | | | | | | — | | | — | — |
| 265 |  | | | | | | | | | | — | — | — |
| 268 |  | | | | | | | — | | — | | | |
| 269 |  | | | | | | | | | | | — | — |

Table 9 contd.: Marks occurring in more than one Series. Thick bars ━ indicate a long-life mark

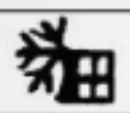
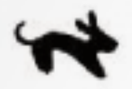
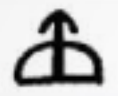
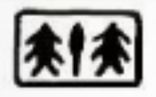
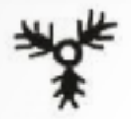
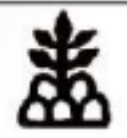
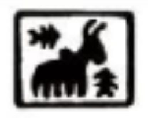
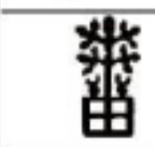
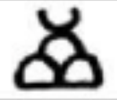
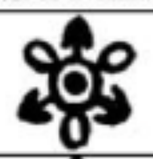
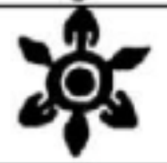
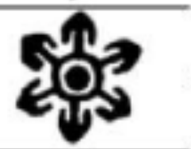
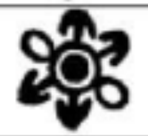
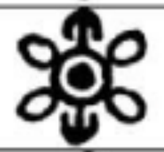
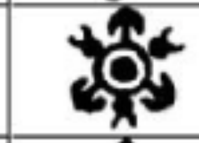
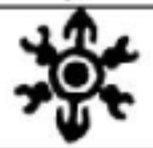
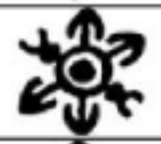
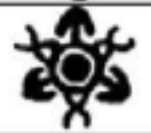
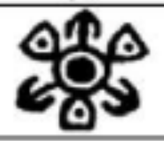
| MARK No. | MARK | SERIES IN WHICH MARK OCCURS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IVa | IVb | IVc | IVd | Va | VIa | Vb | VIb | VII |
| 270 |  | | | | | | | | | | | — | — |
| **THIRD MARKS** | | | | | | | | | | | | | |
| 57 | | | — | | | — | | | | | | | |
| 280 |  | — | — | | | — | | | | | | | |
| 283 |  | — | — | | | | | | | | | | |
| 286 |  | — | — | | | | | | | | | | |
| 297 |  | ▬ | | ▬ | | ▬ | | | | | | | |
| 325 | | | | | ▬ | | ▬ | | | ▬ | | | ▬ |
| 329 |  | | | | — | | | — | | | | | |
| 366 |  | | | | | | | | — | | — | | |
| 368 |  | | | | | | | | — | | — | | |
| 374 |  | | | | | | | | | — | | — | |
| **SIX-ARMED SYMBOLS** | | | | | | | | | | | | | |
| 377 |  | ▬ | | ▬ | ▬ | ▬ | | ▬ | | | | | |
| 384 |  | — | | | | | | — | | | | | |
| 389 |  | ▬ | ▬ | ▬ | | | | | | | | | |
| 390 |  | — | | — | | | | | | | | | |
| 391 |  | ▬ | ▬ | ▬ | | | | | | | | | |
| 392 |  | ▬ | | | | ▬ | | ▬ | ▬ | ▬ | | — | |
| 393 |  | ▬ | ▬ | ▬ | | ▬ | | | | | | | |
| 394 |  | — | — | | | | | | | | | | |
| 407 |  | | — | | — | | | | | | | | |
| 414 |  | | | — | | — | | | | | | | |

Table 9 contd.: Marks occurring in more than one Series. Thick bars ▬ indicate a long-life mark

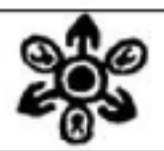
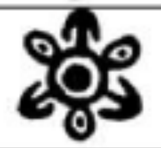
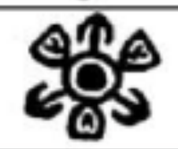
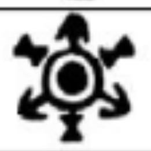
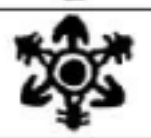
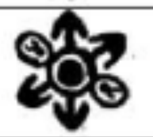
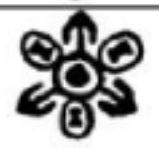
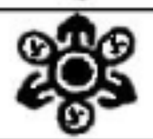
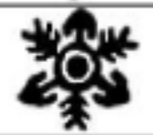
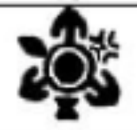
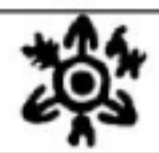
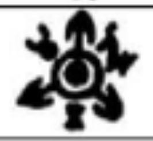
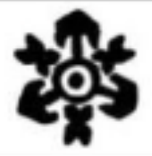
| MARK No. | MARK | SERIES IN WHICH MARK OCCURS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IVa | IVb | IVc | IVd | Va | VIa | Vb | VIb | VII |
| 417 |  | | | ▬ | | ▬ | ▬ | ▬ | ▬ | | | | |
| 419 |  | | — | — | — | | | | | | | | |
| 421 |  | | | — | | — | | — | | | | | |
| 427 |  | | | ▬ | ▬ | ▬ | ▬ | ▬ | ▬ | | | | |
| 434 |  | | | | — | — | — | | | | | | |
| 435 |  | | | | — | — | | | | | | | |
| 439 |  | | | ▬ | | ▬ | ▬ | ▬ | ▬ | | | | |
| 440 |  | | | | | — | | — | | | | | |
| 442 |  | | | | | — | | — | | | | | |
| 457 |  | | | | | | | | — | | — | | |
| 461 |  | | | | | | | | — | | — | | |
| 462 |  | | | | | | | | — | | — | | |
| 605 |  | | | | | | — | — | | | | | |

Table 9 contd.: Marks occurring in more than one Series. Thick bars ▬ indicate a long-life mark

In passing it may be noted that in Series II, only three fifth marks are used, all three being long-life types. No Series II coin has yet been observed to deviate from this rule. Had Series II originally been issued with other fifth marks which were all remelted at the time of restriking, a few examples would surely have escaped even the most rigorous purge. It must be concluded that the original issue was confined to the use of these three fifth marks only. Moreover, when the coins of Series II were restruck, no attempt was made to match the fifth marks used on the new obverses with those on the old obverses. For example, a Series II coin with elephant fifth mark may be restruck using any variety of new fifth mark, including elephant. This rules out fifth marks being the stamp of a particular mine or bullion source, otherwise the restrikes would have matched the fifth mark on the original issue.

The meaning of the third, fourth and fifth marks evidently relates to some phenomena that could be expressed equally by marks of great continuity as well as extreme brevity of timespan. If the fifth marks cannot represent a metallic guarantee, the possibility arises that this is embodied in the third or fourth mark. If so, the formula was complex and the deciphering elusive.

Regarding mint signatures, the pattern of recurrence amongst six-armed symbols does not show the continuity throughout Series I-VII that might be expected if there had been one or two central mints operating from a capital city over a long period. In fact no pattern is evident: only one long-life mark (427) has uninterrupted continuity, and the durations and gaps vary from mark to mark without any consistent trend.

Furthermore, the 20 six-armed symbols used in Series I can hardly signify twenty mints operating within this small *janapada*, therefore if they do signify mints, each mint had multiple symbols.

In conclusion, examination of the phenomenon of symbol duration and recurrence confirms what is apparent from the study of interchangibility: with few exceptions, the mint authorities thought of their symbols as a sequence of five, each having a discrete function, which could be altered only rarely. Other than this, Table 9 gives more negative than positive evidence: the symbols are not personal badges, they show no trend that would encourage us to believe they are mint signatures, and we have no way of telling if they embody a metallic guarantee.

## (c) Subject matter

Although the objects represented in the punchmarks most likely have only symbolic meaning, the choice of subject matter is still of interest, because it reflects the commonplace objects of everyday life. Even if for no other reason, the coins would constitute an historical document on this count alone.

It is hardly surprising that the symbology reflects a primarily agrarian society. The elements of nature loom large: animals, birds, fishes, reptiles, insects, trees and plants of many kinds. More interesting as an indicator of the technical and social development of the time is how man has harnessed these elements (some are shown in Fig. 15, for others see Appendix 3) - the elephant on one type has a rider (mark 105); the dog is a popular subject (190, 213, 280, 348) and other servants of man, the donkey or horse (19), camel (125, 261, 337) water buffalo (338) and goat (109, identified by its eating from a tree, but it could be a deer) are all represented. Fish and fishing play a prominent role, with the fish and spear often juxtaposed (185, 194, 286). This would probably relate mainly to river fishing but sea fishing seems to be referred to in the mark showing a conch with two fishes (336). Some marks appear to show fish in an enclosed area, possibly an irrigation tank, and the waterwheel used for raising water may be intended in marks 123 and 311. One of the most ingenious representations of man the farmer appears on a rare coin in Series I where two bulls are shown yoked to a plough (275). The engraver has neatly solved the problem of showing the plough shaft between the two bulls by placing them one on top of another; a similar arrangement appears in a cave drawing of a chariot from Mirzapur of *c.*800 BC (Kosambi 1965, 115). The depiction of this type of heavy plough verifies its use in northern India in the fifth century BC. The many varieties of leafy symbols are not detailed enough for precise identification, e.g. 9, 85, 92, 189, but the tree (202) is clearly intended as a coconut palm. Some more exotic creatures are also represented - the rhinoceros (320), snake (33, 103) scorpion (30, 216), crocodile (331), and ingenuity is shown in the representation of such specific plants as the cactus or thorn hedge (252).

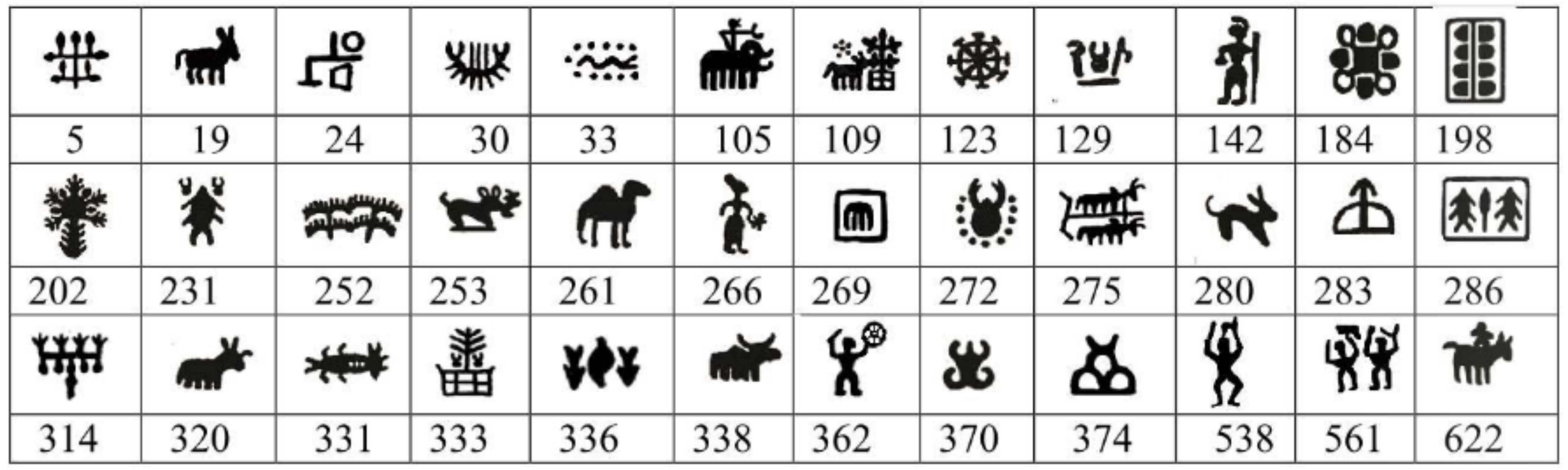


Fig. 15: Selected symbols mentioned in the text

Man-made products are well illustrated, although identification of many of them is difficult. Among the most interesting is the balance (24), which must of course have been used in the process of coinage as well as other trading activities. Various utensils can be recognised such as the candelabrum (314), arrow-tipped standard (5), and elephant goad (seen to the right on 129). Weapons include the bow and arrow (283)and the spear which is seen in combination with many other objects e.g. on mark 200. Humans seem to wield weapons - on mark 363 a man waves his arms in the air; he is possibly holding a small shield and spear; on mark 373 he is either holding a spear and shield or a bow and arrow, and on the interesting mark 362 he appears to be holding the traditional weapon of Vishnu, the missile discus.

Religious, mystical and ritualistic symbols are common. The taurine (272) appears throughout all seven Series on six-armed symbols, as a mark on its own, as an adjunct with other marks and frequently as the subject for a bankers mark. Along with numerous other marks it may be a symbol of auspicious meaning.

Magadha was one of the states through which the Buddha passed as a preacher in the time of Ajatasatru. He found enlightenment under a pipal tree at Gaya, and for centuries after his death he is represented by a tree, footprints, or the 'wheel of law', such as may be seen in the sculptures at Bharhut. But symbols that appear to relate to the Buddha do not appear on coinage until Series IV. There is thus a time-lag between the Buddha's lifetime and the first appearance of what appear to be Buddhist symbols on coins. In Series IVb the earliest tree-in-railing marks occur (93, 333); these are used many times in later coinage. It is tempting here to see this as the sacred tree, duly fenced off, for it became a pilgrimage site at an early date and would have become stripped by pilgrims seeking cuttings had it not been protected. The footprints do not seem to be depicted, although there are two four-fingered hand prints (179, 269). Some of the many wheel symbols may be identified as Buddhist.

Some marks may represent buildings. In addition to the much-discussed arches marks said to represent a stupa (e.g. 374), marks 78, 95, 184, 186, 198 and 243 could pass as plans of buildings.

Representations of the human figure have aroused special interest (see Appendix 3). Apart from the 'Donkey Rider (622) and a few rather doubtful 'figures' in Series I, (64, 71, 497, 508) this subject is avoided until Series Va, i.e. the beginning of the Mauryan period. Many different marks depict human figures in Series V and VI (marks 142, 143, 144, 264, 266, 362, 363, 371, 373 469, 470, 538, 539, 561, 562). Probably all are intended to represent deities rather than living individuals, and as we have seen one of them may be Vishnu or Krishna. Another (142) has been identified as Karttikeya or Shiva. Mark 266, showing a female with a small child, suggests a mother goddess. Human figures stand in a variety of warlike attitudes.

Other aspects of Indian society seen on coins relate to abstract phenomena which are expressed by geometric shapes and designs. Some of these, mostly from Series I, might be celestial objects (marks 48, 152, 154, 164, 166, 171, 178, 183, 191) although where the crescent shapes contain 'stars' within the arc, this seems less likely. The prime importance of the sun has already been noted. However, there are over thirty other geometric shapes, many in Series I, some of which may have been influenced by the 'geometric' phase in *janapada* coinage when elaborate geometric shapes were chosen perhaps to make counterfeiting difficult.

In addition to the alleged Mauryan symbols mentioned by Prasad (1937) as occurring on non-numismatic artefacts, other symbols introduced on Mauryan coinage occur quite frequently in other contexts, for example the 'standard' symbol (*c.f.* mark 248) is seen on a bead in Allahabad Museum, and on a disc from Pataliputra.

## Symbol variation

The Magadha-Mauryan mint authorities progressively refined control over their coinage. But this was an age when precision was not honed to the same extent as today. Variation within the design of symbols that were intended to represent the same subject is common. The long time-span of the *karshapana* coinage is likely to have accentuated this. It is quite possible that a mint workman in Mauryan time could have designed a symbol unaware that something very similar had been used a century or more before (see Table 8 Group A page 53).

It is within Series 0 and I that coins show the greatest range of personal interpretation in design and execution. As the Magadhan imperial system grew from Series II onward, control was tighter, training more rigorous, and results more uniform. It is often a problem to decide whether specific marks are intended to be the same subject but just interpreted differently, or whether they are supposed to represent different subjects. Particularly daunting are the large numbers of 'twig' or plant symbols where there is a vast permutation of number of branches, angle of branches, formation of twig ends, thickness of stem, handling of stem base, and addition of ornament (Fig. 16). The system of using marks that belonged to a recognised place in the sequence of five sometimes helps, but the classification of these plant symbols remains tentative.

Further examples of uncertainty are seen in the objects that human figures hold, which are often extremely small and vary from punch to punch.

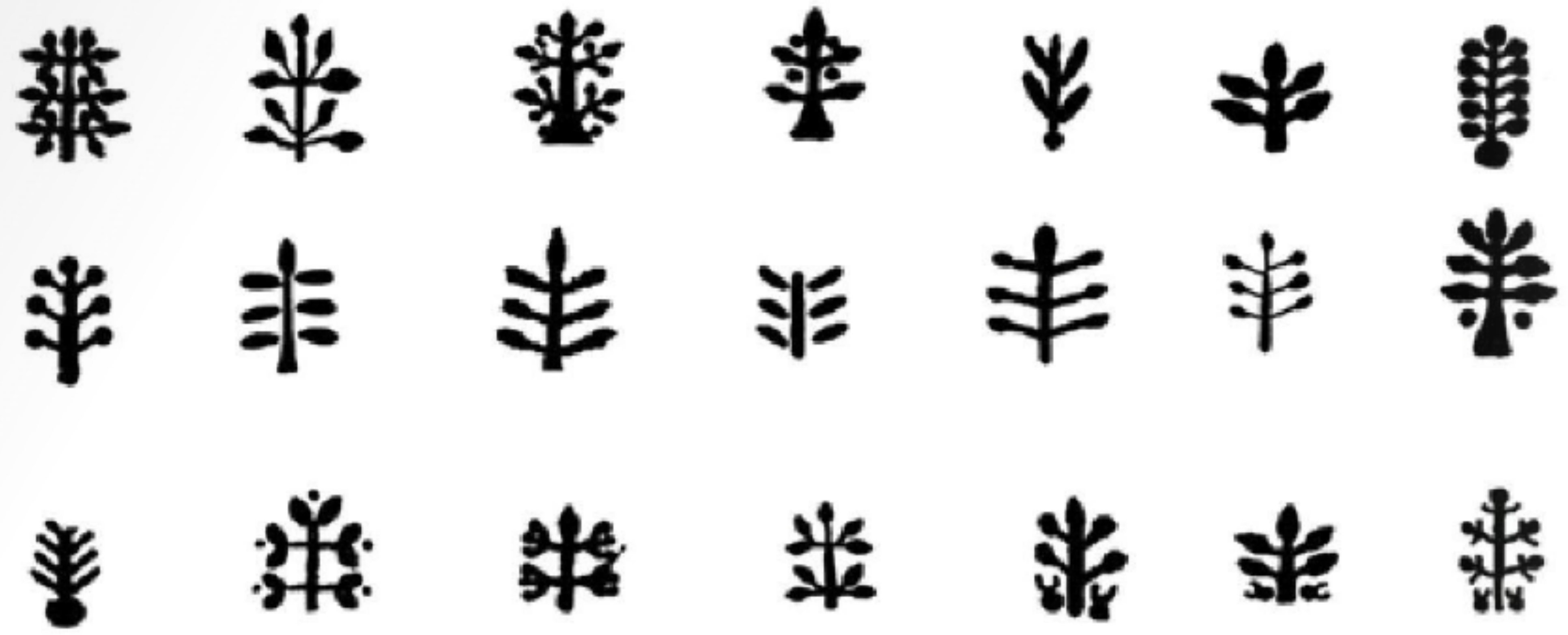


Fig. 16: Examples of 'twig' or plant symbols. While some are distinctive, on others it is difficult to tell whether different symbols were intended. There are 59 symbols consisting of plants or embodying plants in them.

The main conclusions drawn from iconography may be summarized as:

1. The multiple iconography and lack of inscriptions on punchmarked coinage are unique features contrasting with other ancient monetary systems.
2. Marks were symbolic rather than literal, and personal signatures, rulers or individual personalities are unlikely to be represented.
3. The monetary system was tightly controlled, with the five marks all having discrete functions, and only four marks are seen to change function deliberately.
4. Marks had lifespans, before and after which they are not seen. A few marks span very long periods ('long-life' marks), implying that the meaning of the marks relates to something that may be very brief or very prolonged.
5. The six-armed symbol is unlikely to be a mintmark but might be a coded badge representing some aspect of Magadhan state authority.
6. The subject matter used in the symbols shows an agrarian society, depicting natural and man-made objects, religious and mystical symbols (some Buddhist), human figures (possibly all deities) and abstract shapes.
7. Punchmarked symbols occur on Mauryan archaeological objects but the correlation has little specific value.

## Alleged Numismatic References in the Arthashastra

The allegedly numismatic references in the *Arthashastra* have been examined by Gupta (1960). There are difficulties in understanding this work owing to the difference in interpretation put upon certain words by modern scholars. Often the same expression can have different meanings in different contexts.

Until the Kushan period, the subcontinent had no gold coinage, yet the *Arthashastra* appears to mention gold coin: "*The State goldsmith shall employ artisans to manufacture gold and silver coins from the bullion of citizens and country people*". The word translated as 'coin' *(lakshana)* can also be used as 'sample', and other expressions that might have been interpreted as 'coin' may actually mean units of weight. Although references to weights or coins occur frequently in the *Arthashastra,* coinage and the mint are described only in one chapter (Book II Chapter XII), which is headed 'Conducting mining operations and manufacture'. Here it is stated that '*The superintendent of the mint shall carry on the manufacture of silver coins made up of four parts copper and one-sixteenth part of any of the metals tikshna, trapu, sisa and anjana. These shall be a pana, half pana, quarter and eighth. Copper coins made of four parts of an alloy shall be a mashaka, half mashaka, kakani and half kakani. The Examiner of coins shall regulate currency both as a medium of exchange and as legal tender admissible into the treasury. The premia levied on coins paid (into the treasury) shall be 8% known as rupika, 5% known as vijayi, one-eighth pana known as parikshika (testing charge), besides a fine of 25 panas to be imposed on offenders other than the manufacturer, seller, purchaser, or examiner.*

Shama Sastry (1967) has also interpreted Book II Chapter XIV, which deals with the State Goldsmith, as relating to coinage, but as Gupta has pointed out *(JNSI*1960, 14) this chapter has no reference to the word mint; once again the word translated as 'coins' *(lakshana)* actually refers in this particular context to a sample (of gold). Moreover had the State Goldsmith been concerned with minting coins he would surely have coined gold, yet not a single genuine gold punchmarked coin is known of this period.

Inclusion of the mint under Chapter XII shows that it was a sub-department of the mines and it obtained its bullion for silver, copper and the other metals mentioned from the mines, although it is not clear what all the other alloys mentioned are in modern terms. Lead, gold, and bismuth are common trace elements in the silver smelting process. The names of the mines are given in the *Arthashastra,* but they cannot be located since they bear no resemblance to present-day names. While some bullion would have come from local sources such as the Kulu Valley and Manbhum (Purulia) in West Bengal, if demand outstripped the supply from local mines sources at a greater distance would have to have been sought, but no work has yet established a link between trace elements in coins and their geological sources. One of the elements traded between Gandhara and the Gangetic region in the Mauryan period, when silver punchmarked coinage output seems to have reached great proportions, may have been silver bullion. However mines were not the only source of bullion. It is clear from the description of the duties of the Examiner of coins that he not only regulated the currency as a medium of exchange but also received scrap silver (coins and ornaments) from the public. This is clear from the statement that the treasurer *(Sannidhata)* should only receive such coin or money *(hiranya)* which was declared genuine, and that he should cut the bad coins. Of the levies mentioned, *parikshika* was probably a small charge made for testing the silver brought to the examiner. When the bullion was accepted by the examiner, he supplied in return newly minted coins. The *rupika* was probably a fee charged for this service which would help to cover the cost of manufacture. A similar practice occurred in the Mughal period, and even into the British period members of the public could take bullion to the mint and receive new money in return. The term *vijayi* may have been a charge to compensate for loss of weight of worn coin submitted as bullion.

It is thus clear that gold, silver and copper are being referred to, and that debasement was practiced. Even if the gold reference is to ornaments rather than coin, we still have a fairly clear reference to debasement and copper coinage, yet debasement was not a part of the Magadha-Mauryan coinage until near its end, and copper coinage was not introduced into the subcontinent until about the early or mid-second century BC. The numismatic evidence shows that Mauryans managed with a silver coinage alone, and this therefore becomes compelling evidence that at least some of the data in the *Arthashastra* relates to post-Mauryan times. In this light it must remain an open question how much this immensely important historical document, which has been used amplify the interpretation of the Mauryan period, is actually relevant to punchmarked coins.

## The Debasement and Termination of the Karshapana Coinage

From *c.*200-170 BC the rapid expansion of the kingdom of Bactria under the Indo-Greeks progressively deprived the Mauryan/Sunga peoples of their northwestern provinces. By 200 BC these invaders had entered Arachosia and by 180 they were in possession of Gandhara and possibly Sakala. Raids into the rest of the Indus valley and the upper Gangetic plains soon followed. This must at least have closed the *karshapana* mints in these areas, and the Indo-Greeks put into circulation an abundant silver coinage of their own. This invasion, and the breaking away of many tribal areas south of the Indo-Greek realm, probably soon after, is reflected in the profound changes seen in the coinage: debasement of certain Mauryan-style types, termination of silver punchmarked issues, appearance of Mauryan-like local copies in base metal and the rise of a cast copper coinage. The coins alone tell us that the economic structure of the Mauryan Empire collapsed. The Indo-Greek invasions had delivered a double disaster to the once-thriving trade with the west, firstly by cutting off the caravan routes that enabled the long-distance trade, and secondly by depriving the Empire of vital raw materials including, very probably, significant sources of silver. That is undoubtedly one of the reasons why there is a dearth of new silver coinage in most of the northern subcontinent from the mid-second century.

At the terminal end of the punchmarked coinage there are many hoards containing datable Indo-Greek, Kushan and Roman coins along with worn out Mauryan coins. Punchmarked and Kushan coins appeared together in the northwest in the Mir Zakah and Taxila monastery hoards. Punchmarked coins also occur with Indo-Greek coins in the central area at Kangra, Thatta and Bairat, and with Roman coins in the southern region at Malambam (Madras), Nasthulapur, and Trichur (Cochin) (Gupta 1963, 144). This does not mean that punchmarked coins continued to be issued into the early centuries AD: if it did, we should see some new types coming in amongst these hoards, but all the post-Mauryan punchmarked coinages (Series VIII) seem to have been issued shortly after the breakup of the Mauryan Empire in the second century BC. A sharp decline in trade would have brought about a fall-off in the circulation of coin in the market place, but it is something of a mystery that the old *karshapanas* turn up in very worn condition not only in many hoards in the south, but also from as far north as the Gangetic plains, e.g Allahabad (Tye, *pers comm*). It is possible that silver, in the form of old Mauryan coin, remained in the possession of merchants and traders outside the Indo-Greek territories but because of the collapse of tax-raising governance, it did not circulate and was withheld from the coffers of small, poorly organised successor states, so that no silver for new coinage was accessible to them. Worn out coin may also have become an unacceptable form of currency for reasons that were not entirely rational. The survival of old punchmarked coins in large numbers does not preclude many more having been melted down.

Attempting to arrive at a date for the actual termination of silver punchmarked coinage is hampered because as yet no hoard has been described that can assist us directly. Dating is based on a few fragments of the political history reported by Chinese, Indian and Western historians after the decline of the Mauryans, augmented by the numismatic spectrum at this time. While the *Ruga Purana* (Mitchiner, J.E., 1986) describes with some cogency the Indo-Greek invasion, there is no parallel narrative to tell us the fate of those on the receiving end of this invasion. The coins represent a significant part of the primary evidence chronicling this era.

From around 80% purity in Series I, the silver content of the *karshapana* was slowly but progressively reduced, and by Series VI it also became more variable (see the section under metallic composition, page 40). In a few Mauryan types, e.g. 542, 543, 566, 573-5, and 576-82, the punches are carelessly cut, execution is poor, and debased specimens more frequent, but the vast majority of late punchmarked coins in Series VI and VII still retain their silver appearance.

It is not known exactly how long Mauryan-style coinage continued into Sunga time, but the termination of silver *karshapanas* was abrupt. There is very little in the way of transitional coinage.

There seems little doubt that the imperial authority lost control to newly independent states in the former Mauryan realm. At first these states probably continued to use the punchmarking technique, but very soon the casting method was introduced. The die striking method introduced by the Indo-Greeks was progressively adopted throughout the subcontinent in the second century BC. Some brave attempts at base silver are apparent, but these coinages were mostly of copper.

Moulds dating to the Kushan period have also been found in which copies of *karshapanas* were cast. It was not only the post-Mauryan states that managed without the use of silver coinage - the Kushan rulers in India were virtually without their own silver coinage in the period *c.*150 BC - 200 AD, and once again the evidence is ambiguous on whether the old *karshapanas* helped to fill this gap. The Indo-Greeks certainly made use of them - over 4000 were found with Indo-Greek, Indo-Scythian and Kushan coins in a sacred tank at Mir Zakah, near Kabul (Errington 2003).

## Why are there no portraits?

The shock of the Indo-Greek invasions and the misery wrought on ordinary folk must have reverberated through the country for many decades. Numismatics provides one of history's poignant ironies in that the Bactrian and Indo-Greek coinages, whose sensitive portraits stand at the peak of Hellenistic art (Fig. 17), stem from a ruling class capable of inflicting such destruction on communities that appear to have done nothing to provoke it, while at the same time engaging in political intrigue and infighting amongst themselves. It would take another 400 years

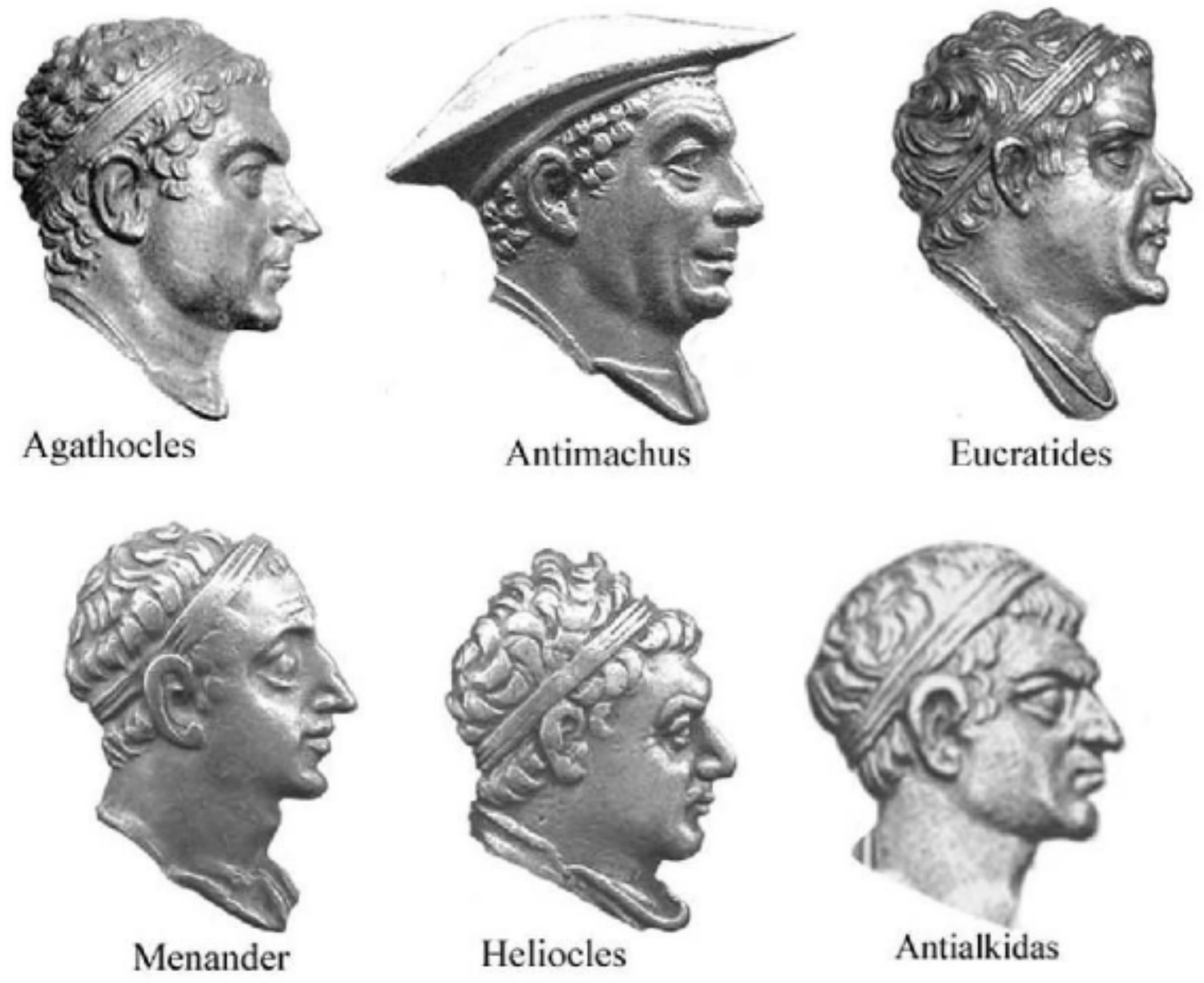


Fig. 17: There are no portraits of the characters who ruled the Magadha-Maurya empires, but the invaders are recorded by way of coin portraits. Here a sequence of Bactrian and Indo-Greek rulers during the second century BC come alive through some of the greatest masterpieces of ancient coin portraiture. Antimachus portrait courtesy British Museum.

before the civilisation so carefully built by Asoka could once again be matched, in the form of the Gupta dynasty in the fourth century AD.

The lack of portraiture in the punchmarked series probably has an even more profound message concerning the ancient Indian concept of personality: while the Bactrian and Indo-Greek rulers were past masters at developing the personalized cult to maximize their standing, no such imagery is seen in early Indian art. This is manifestly not due to a lack of technical engraving skills – some of the punchmarks, as we have seen, are masterpieces of design and workmanship. Rather, it conveys the impression that Indian rulers, at least until Asoka, had not hit upon the concept of the personal cult. Such human figures as we see show only symbolic human poses, with mere dots for heads. In a sense this continues the tradition of prehistoric art where figurines and rock art depict humans but never attempt to characterise them as individuals.

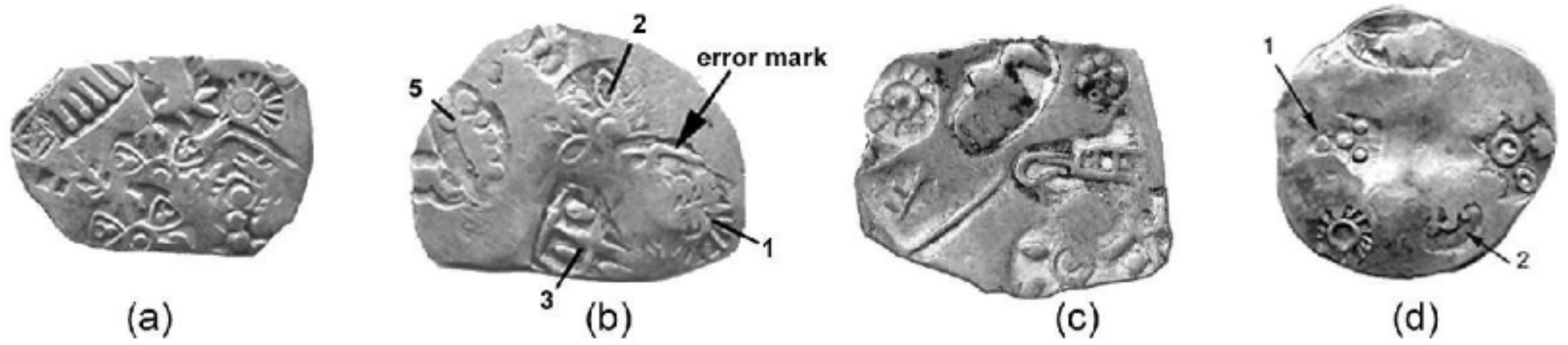
## Wayward Coins

In addition to the stylistic 'streams' which suggest regional mints (see above under Regional Evidence from hoards, page 49), single types of *karshapana* occasionally appear that intuitively seem 'odd'. The style may be eccentric, the symbols unusual, the weight or fineness abnormal, there may be too many marks or the wrong marks, or the technique of manufacture may show unusual features. 'Oddness' is not necessarily a scientific concept and scholars will not always agree on which coins should be thus classified, yet it is worth paying special attention to them. Are they genuine, or forgeries of ancient or modern time? The notes below discuss coins which are 'wayward' in the author's opinion (excluding those covered in Series VIII); the list is by no means exhaustive and the opinions expressed remain just opinions.

### Mint Errors

The use of five or six separate punches in the coining process meant that there were five or six opportunities for error every time a coin was produced. It is a tribute to the high standards of the mint workmen that remarkably few have been recorded. Errors which can be spotted today are virtually restricted to the use of wrong punches. Gupta noted only fifteen mint errors amongst the 7668 coins in the Amaravati hoard and found them to be of four types:

1. Coins with five normal marks but with one of them also stamped a second time making six in all (Fig. 18a).



(a) (b) (c) (d)

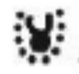
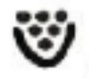
| | | | |
|---|---|---|---|
| (a) Six arms repeated Series III (GH 320) x 1.3 | (b) Error fourth mark, Series I (GH39) x 1.13 | (c) Series I (Type 183). The elephant has been replaced by a bull (hump visible, horns off flan). It shows that a bull punch was in use when this class was struck even though a bull does not feature in it (Tye collection). x 1.2 | (d) Series I (Type 86). The normal third mark  is replaced with  (arrow 1). Arrow 2 shows the front part of the elephant mark (BM). x 1.15 |

Fig. 18: Examples of mint errors

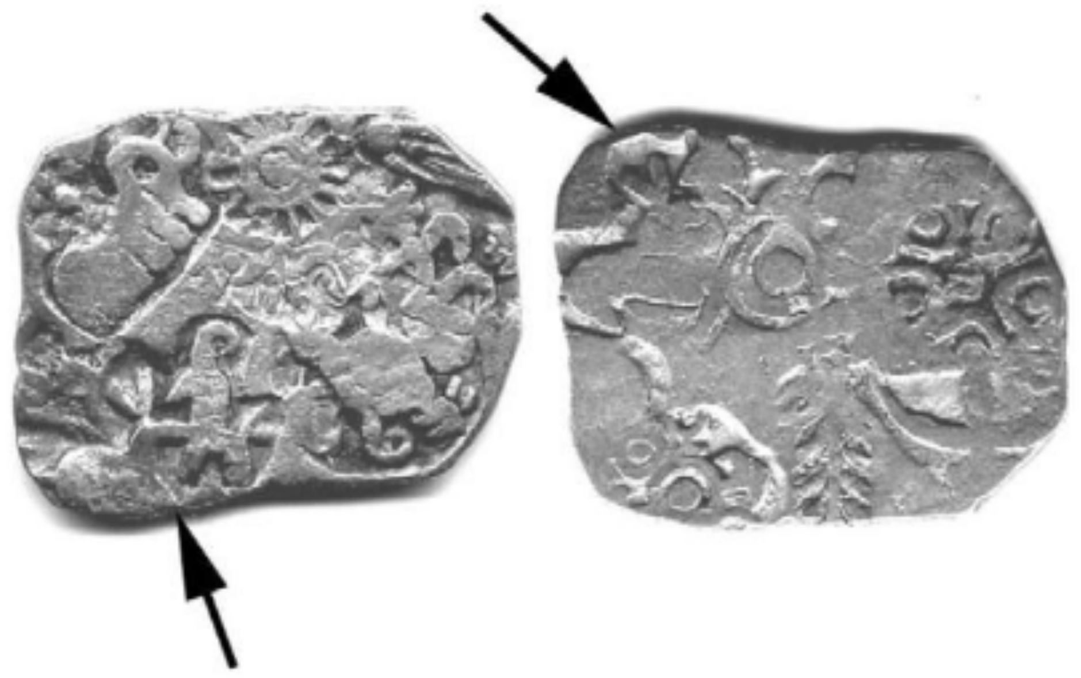
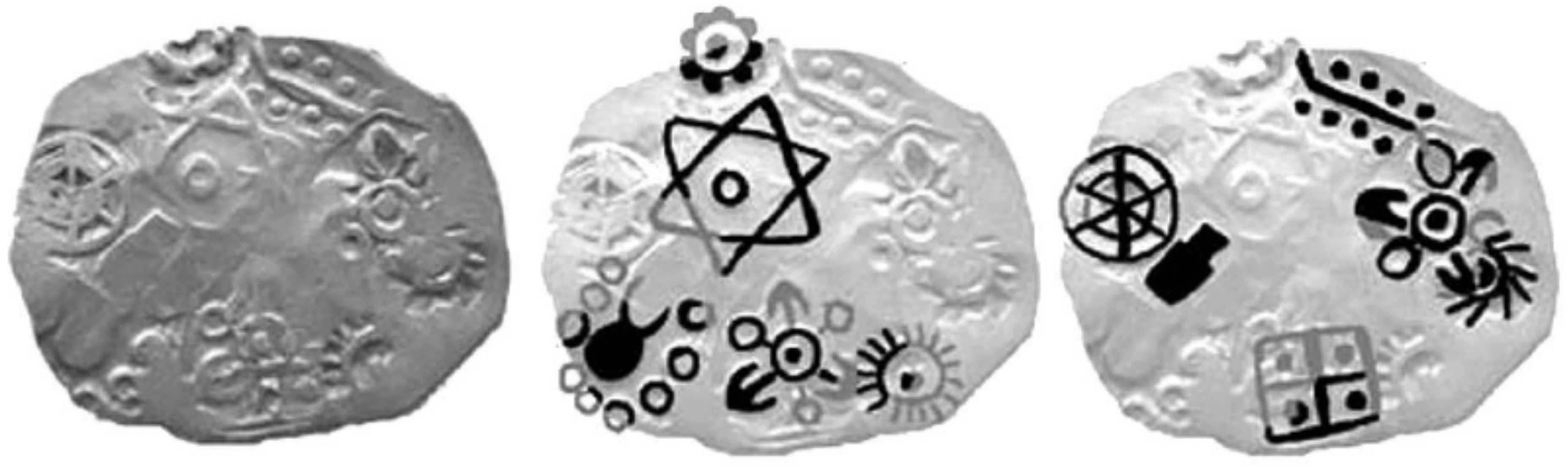


Fig. 19: Mint error on double obverse coin of Series III. x 1.5

2. Coins with one mark twice and another missing.
3. Coins with one mark three times and two others missing.
4. Coins on which a normal mark is replaced by a different one (Fig. 18b -d). Common error in Series I coins.

When coins were being restruck, the chances of error were higher because the mint workman had first to decide on which side to place the new punches. When coins were covered with bankers marks, this could be difficult. An example of this kind can be seen in Fig. 19. The punch showing a dog with pup in mouth appears on both sides of the coin struck from the same punch. The workman restriking this coin began on the wrong side but after the first punch he noticed his mistake and turned over. It shows incidentally that the first mark to be struck in this case was the 'fourth' in our sequence. A more serious error is seen on a double obverse coin of Series I (Fig. 20), where the mint workman struck all five new obverse punches on the same side as the original obverse without realising his error. It thus has ten official marks on one side!



(a) (b) (c)

Fig. 20: Series I double obverse with both types on the same side. (a) the coin (b) Type 93b highlighted, (c) Type 62 highlighted. Black highlights show visible, grey show reconstructed. x 1.5

### Contemporary Forgeries

Ancient forgeries ('contemporary forgeries') are quite rare in punchmarked coinage. They betray themselves through their low weight, poor metal, and stylistic eccentricities. They are of three main groups: plated coins with copper core and silver coating produced by the normal punchmarking technique, debased silver struck coins, and debased silver cast coins. These coins are quite different from the modern forgeries that have appeared in the last forty years or so, which are listed below. The fine line between ancient forgeries and localised state issues is however still difficult to draw.

While describing the suppression of the wicked, the *Arthashastra* refers to a person who often purchased metals, alkalis, charcoal, bellows, clippers, hammers, anvils, dies and crucibles. These are of course the instruments of coin manufacture and the author is alluding to counterfeiters. A spy was to be appointed to detect counterfeiters, who were to be banished on conviction, and a heavy fine was imposed for accepting or exchanging counterfeit coin.

## Ancient Punchmarked forgeries (plated)

Plated coins (silver on a copper core) flourished briefly during the breakup of the Mauryan Empire, as seen from their occasional inclusion in hoards of mainly base silver and copper of this period. However when they occur as isolated examples in regular Magadha-Mauryan hoards they probably represent the work of counterfeiters operating during the Imperial period. The few coins of this nature that have been noticed are the Indian counterpart to the 'plated' Roman denarii. They may be private forgeries by mint workmen who had negotiated some kind of corrupt arrangement with the mint, or by other competent imitators, rather than official mint debasements. Four examples are illustrated in Table 10. They demonstrate that by the mid-late third century BC the technique of coating copper with a surface of silver had been acquired in India. The mystery of the plated Roman denarii from apparently official dies has never been conclusively explained, and likewise the plated punchmarked coins. The illustrated examples W1-W4 are all struck forgeries from Mauryan hoards.

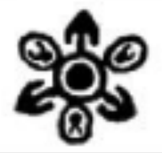
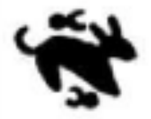
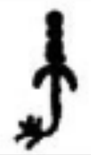
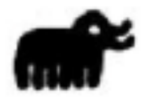
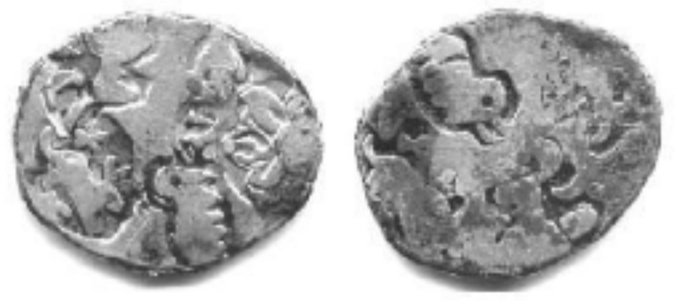
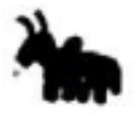
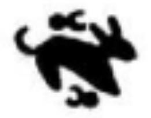
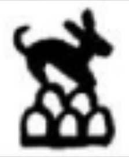
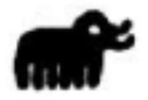
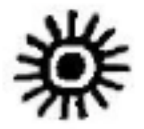
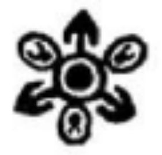
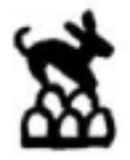
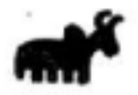
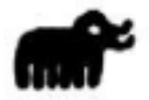
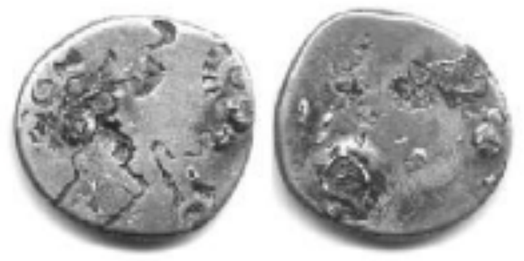
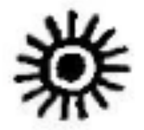
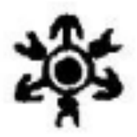
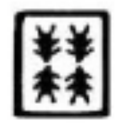
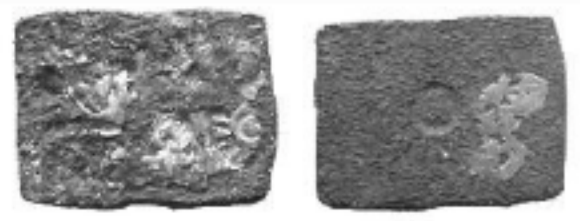
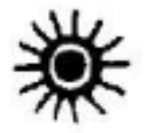
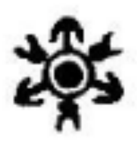
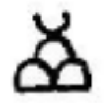
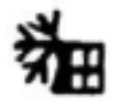
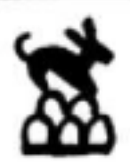
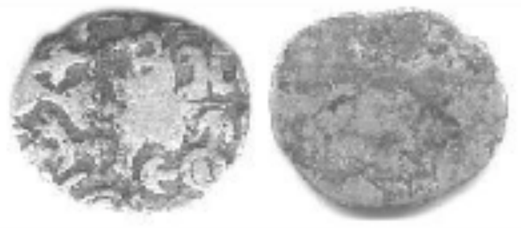
| No & source | Type No. | 1 | 2 | 3 | 4 | 5 | Photo/sketch |
|---|---|---|---|---|---|---|---|
| W1<br>A | III/IV<br>Double obv<br>Mixed symbols<br>3.23 gm |  | |  |  |  |  |
| | | - |  |  |  |  | |
| Comment: The maker shows no understanding of the Magadhan coin system, omitting the sun from both sides, including two fifth symbols on one side, and only including four marks on the other side. The punches look authentic but on closer inspection they betray errors e.g. missing a taurine on the dog symbol. The same elephant punch has been used on both sides indicating that they were struck by the same maker at the same time. | | | | | | | |
| W2<br>A | IVd<br>416<br>2.92 gm |  |  |  |  |  | Bankers marks  |
| Comment: the symbols look totally authentic even to bankers marks on the reverse, but the silver coating is broken to reveal a copper core. | | | | | | | |
| W3<br>A | VIa?<br>2.70 gm |  |  |  | ? | ? | Small Rev mark  |
| Comment: most of the silvering has been lost revealing the copper core | | | | | | | |
| W4<br>A | IV/VI<br>Hybrid<br>3.34 gm |  |  |  |  |  | -  |
| Comment: base and plated, symbol style poor, wrong use of fifth mark, no reverse mark. | | | | | | | |

Table 10: Plated punchmarked coins with copper core.

## Ancient Cast forgeries

The use of the casting technique is confined to later Mauryan forgeries. Casting was introduced into tribal copper coinage in the late third or second centuries BC, so the use of this method to reproduce silver punchmarked coins suggests that they were manufactured after cast copper coins had been introduced. The Amaravati hoard contained one such cast piece with very blurred marks (coin 7668), which would indicate that casting was in use before the deposition of this hoard.

Easily detected when there is more than one coin from the same mould (Table 11), because of the exact match between them, this is a category of punchmarked coin where it is nevertheless hard to know if they are ancient or recent, as the process of casting tends to produce a rough surface that can be a mistaken sign of antiquity.

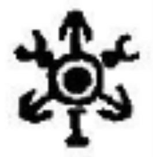
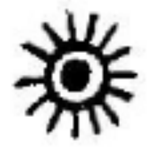
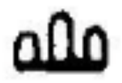
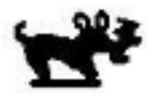
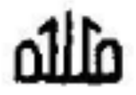
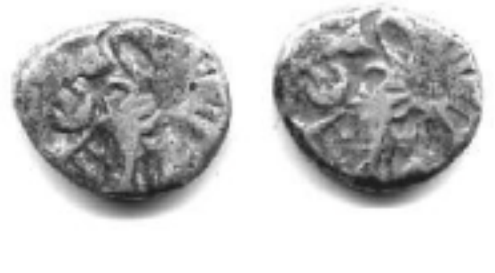
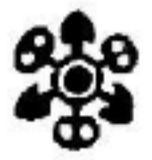
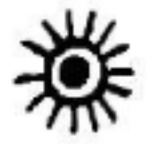
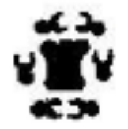
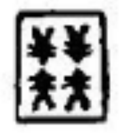
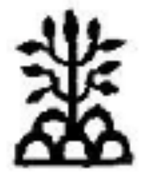
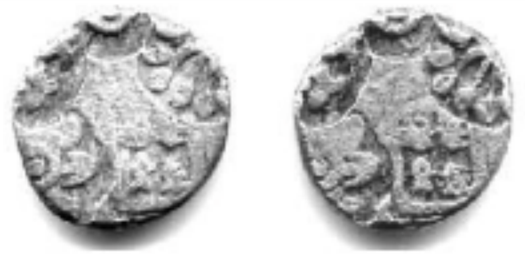
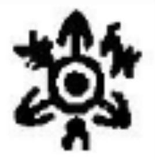
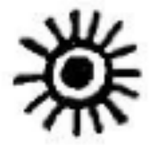
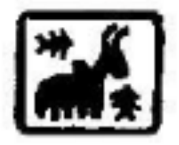
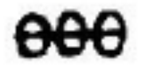
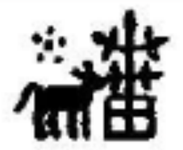
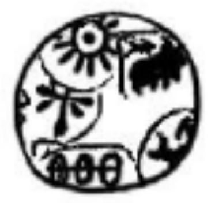
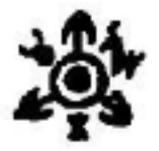
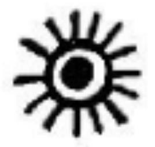
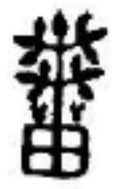
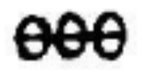
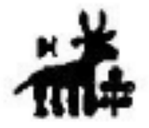
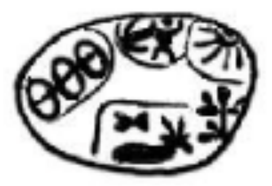
| No & source | Type No. | 1 | 2 | 3 | 4 | 5 | Photo/sketch |
|---|---|---|---|---|---|---|---|
| W5<br>A | Va<br>482 |  |  |  |  |  |  |
| W6<br>A | Va<br>488 |  |  |  |  |  |  |
| W7<br>A | Va<br>505 |  |  |  |  |  |  |
| W8<br>A | Va<br>507 |  |  |  |  |  |  |

Table 11: Cast contemporary forgeries

As an example of ancient cast material, samples from a group of 36 coins from Delhi are shown (W5-8, Table 11). The remaining 66 coins in this hoard were genuine Magadha-Mauryan pieces from Series II to Series VII. Many of the coins in the hoard, both genuine and counterfeit, had filed edges. It seemed likely that this filing was ancient and may have been a means of illicitly gaining silver from coin edges. All 36 counterfeit coins were round. Their weight range is very large at 2.56 to 3.87 grams, with an average of 3.21 grams; the metal is slightly base. In addition to the filings, the profit for the forger would come from the base alloy and the short weight, and the maker had little interest in maintaining a consistent weight. The moulds appear to have been made from genuine punchmarked coins.

The breakdown of the cast coins in this hoard was as follows:

Type 482 first mould 5 coins (W5), second mould 7 coins, third mould 4 coins.
Type 488 first mould 5 coins (W6), second mould 4 coins.
Type 505 8 coins one mould only (W7).
Type 507 3 coins one mould only (W8).

## Ancient Struck debased silver coins - types imitating Series IV-VI (Table 12)

This comprises a group of coins, seen in trade over the last 30 years, which share a 'family likeness', drawing upon a wide range of coins from Series IVa to VIb. Scholars discussing this group have argued whether it represents the work of a late Mauryan counterfeit ring or a post-Mauryan local mint. Whichever it is, this workshop functioned on quite a large scale using multiple punches for the six-armed symbol, dog & pup, and crescent on arches. The reasons that swing the argument in favour of a forger's workshop functioning during the late Mauryan period, rather than a post-Mauryan breakaway state, are as follows:

1. The coins do not imitate any of the known, common, 'terminal' types of Series VI, thus suggesting the date of issue of this group was at some time before the very last Mauryan issues.
2. They comprise imitations of a range of specific types from Series IV to Series VI such as would have been seen in circulation in Mauryan time, rather than adopting a single type or closely knit group, as is common with post-Mauryan issues.
3. The coins are bonded by a cohesive style that with experience becomes instantly recognisable, almost as if a single individual was cutting all or most of the punches. This style is clearly that of a person not trained in the Mauryan mint (see below) yet it strives to make coins that will blend undetectably with genuine coins.
4. There is no attempt to introduce any non-Mauryan marks such as are often seen in Series VIII, (except use of a flower mark on some reverses), neither do the coins show any progressive evolution, which suggests the choice of symbols was not politically motivated and the issue had a limited timespan.
5. There are none of the degraded characteristics of post-Mauryan coinages, such as poor workmanship, corroded metal, or lack of control over selection of punches, such as can be seen in coins of Series VIII.
6. The findspots are not localised but have been found amongst several hoards of normal Mauryan coins whose sources are spread across the Gangetic region, although the only published hoard with certain provenance is from Mahasthan in Bangladesh (Boussac & Alam 2001). This augments the case for a date of issue prior to the regionalisation of coinage that occurred on the breakup of the Mauryan Empire.
7. All the coins are of debased silver; from their appearance they all seem to be of about the same alloy. All are light weight (2.26 to 3.01 grams recorded range). The debasement is slight, and when newly minted the coins might have passed as full silver. The debasement would be the source of the financial gain to a forger.

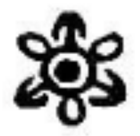
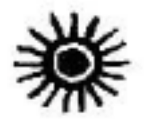
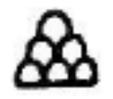
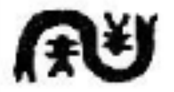
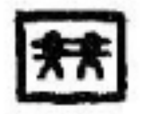
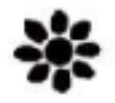
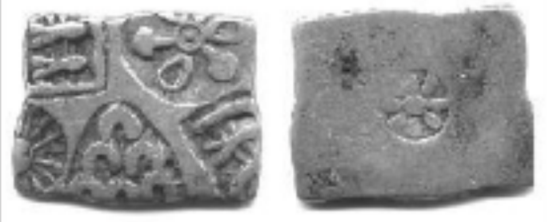
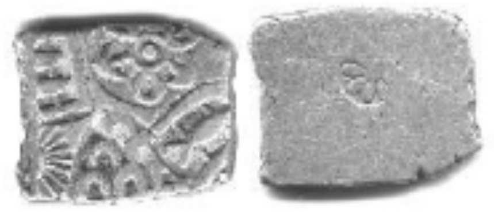
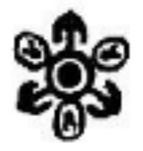
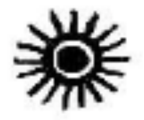
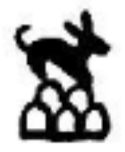
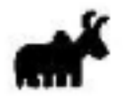
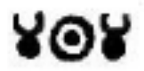
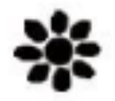
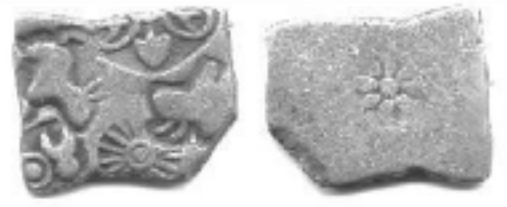
| No. & source | Type No. | Metal &wts. | 1 | 2 | 3 | 4 | 5 | Rev. | Photo |
|---|---|---|---|---|---|---|---|---|---|
| W9<br>A | IVa<br>344 | ***Base AR*** 2.68;<br>3.05 |  |  |  |  |  |  |  |
| Comment: In Series IV bankers marks are random and small; on both these coins the maker has added a flower-like mark placed centrally on the reverse like the official reverse marks of Series V and VI, but of a design unknown in the Imperial Series. Furthermore the positioning of the symbols on both coins is the same although the punches are different. Coins of this type predominate in the Mahasthan Hoard (Boussac&Alam 2001) | | | | | | | | |  |
| W10<br>A | IVd<br>418 | ***Base AR*** 2.69 |  |  |  |  |  |  |  |
| Comment: This coin employs the same central reverse symbol as the above, once again inappropriate for Series IV. | | | | | | | | | |

Table 12: Debased coins with a 'family likeness'

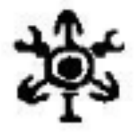
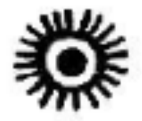
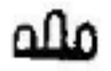
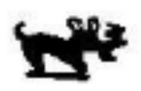
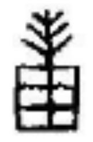
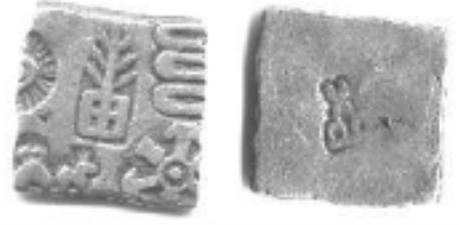
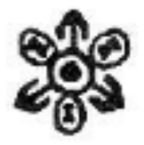
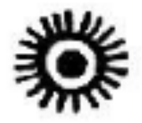
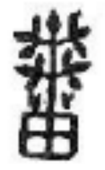
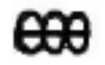
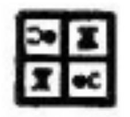
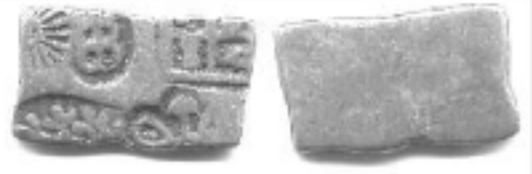
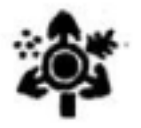
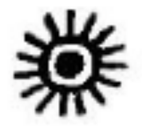
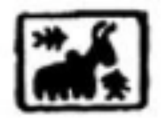
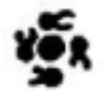
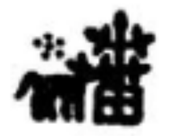
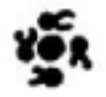
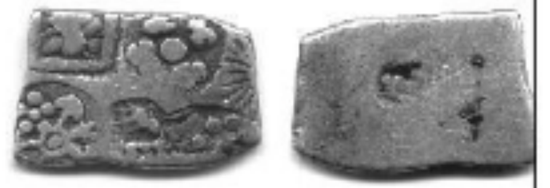
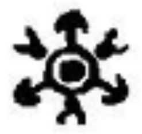
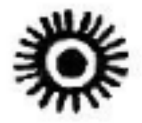
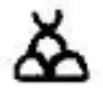
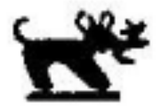
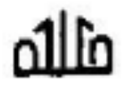
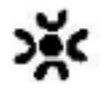
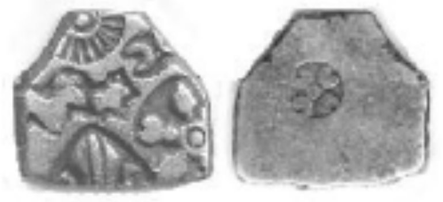
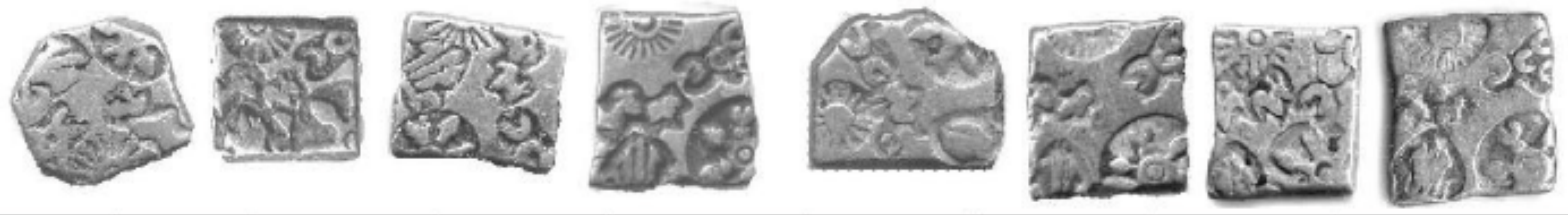
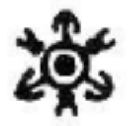
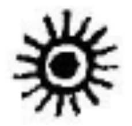
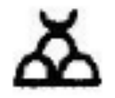
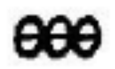
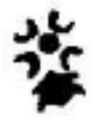
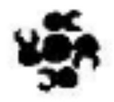
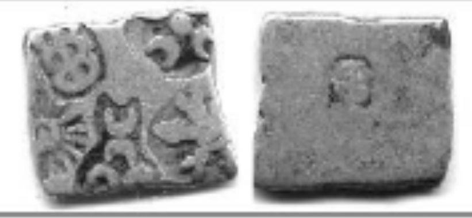
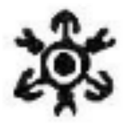
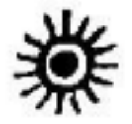
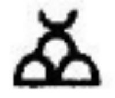
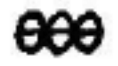
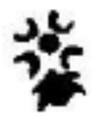
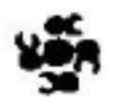
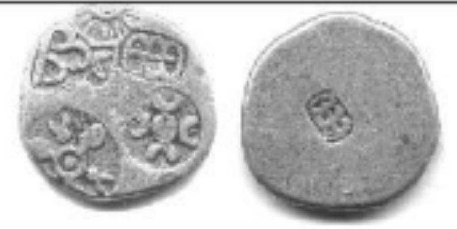
| No. & source | Type No. | Metal &wts. | 1 | 2 | 3 | 4 | 5 | Rev. | Photo |
|---|---|---|---|---|---|---|---|---|---|
| W11<br>A | Va<br>481 | Base AR 2.57 |  |  |  |  |  | - |  |
| Comment: The three arches are wrongly drawn of equal size, the I on the 6-armed symbol is drawn as a solid rectangle, and a Bold arches mark appears on the reverse, inappropriate for Series Va. This type occurs in the Mahasthan hoard. | | | | | | | | | |
| W12<br>A | Va<br>509 | Base AR 2.54 |  |  |  |  |  | - |  |
| Comment: Although the coin has no reverse mark, which is correct for Series Va, the 6-armed symbol shows the same characteristics as described above and the light weight and base metal betray its membership of the group. | | | | | | | | | |
| W13<br>A | Vb<br>519 | ***Base AR 2.62*** |  |  |  |  |  |  |  |
| Comment: Symbols are smoother than normal, deer in front of tree is smaller and without star, six-armed symbol has dumbell-shaped arrowheads. | | | | | | | | | |
| W14<br>A | VIb<br>543 | ***Base AR, av*** 2.68 |  |  |  |  |  |  |  |
| Comment: Ten examples, seven of which have the same arrangement of symbols. Weight range 2.26 to 3.01 grams. Six - armed symbol with flower-bud-like arrows. Additional examples shown below. Coins of this type occur in the Mahasthan hoard. | | | | | | | | | |
| W14 Cont.<br>A |  | | | | | | | | |
| W15<br>A | VIb<br>552/3 | Base AR 2.76 |  |  |  |  |  |  |  |
| Comment: Incorrect use of reverse mark and flower-bud arrow. | | | | | | | | | |
| W16<br>A | VIb<br>552/3<br>var | Base AR<br>2.85 |  |  |  |  |  |  |  |
| Comment: 5th mark is incomplete – the maker has failed to notice the adjunct beetle. | | | | | | | | | |

Table 12 contd.: Debased coins with a 'family likeness'

Some of the specific characteristics unique to this workshop include a failure to understand which coins should have Bold reverse marks and which should not. Thus on the Series IV imitations, only a flower-like mark, unknown on official coins, is used on the reverse. This mark is also seen on some post-Mauryan coins classified in Series VIII as 'Mathura Type' (Types 602-607). It is therefore tempting to link the Mathura coins to this workshop, but two factors separate them. Firstly the Mathura coins invent a couple of unusually flamboyant marks not seen on Mauryan coinage. They seem to be saying 'look at me!', whereas the present coins are emphatically saying 'don't look (too closely) at me!' Secondly, the 'flower' symbol used on the Mathura coins typically has 15 rays whereas the present coins have eight (i.e. the resemblance is superficial).

A further bonding characteristic of this group is seen in the six-armed symbol where the arrows are usually drawn with arrowheads too thin, like flower buds (Fig. 21). Likewise the oval in the six-armed symbol is usually balloon-shaped. The engraver has formed a mental image of the official designs but has not looked closely at the actual coins when cutting the punches.

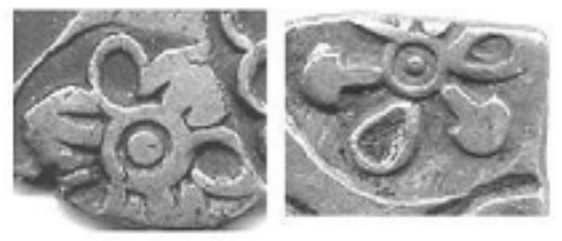


Fig. 21: Typical official (left) and unofficial six-armed symbols as seen on Type 344 (Series IVa)

The coins of Type 543 show an interesting combination of fixed and variable positions for the marks, whereas post-Mauryan local coins veer towards exclusively fixed positions, as seen in the imitations of Type 566.

Table 12 shows the types so far noted from this workshop. The symbol drawings show the official Magadha/Maurya forms, not the adapted styles of the coins; these are seen in the photos.

It is likely that this is not the only counterfeit school operating in Mauryan time that used the normal punchmarking technique, but so far it is the only one that has stood out clearly.

## Modern Forgeries

Before the 1970s, modern forgeries of punchmarked coins were few. The market value of these coins was low and counterfeiting had traditionally focussed on the more lucrative material such as Bactrian tetradrachms. The recognition that punchmarked coins form an important part of the late Iron Age historical narrative, along with some spectacular new finds and increasing disposable wealth, has prompted greater interest, rising prices, and thus a greater temptation to forgery.

### Modern Diestruck forgeries

This group of coins was purchased *c.*1962 but comes from a collector who was most active in the 1920s and 1930s (Table 13 and Fig. 22). It comprises at least two variants, both sharing a common obverse in which Mauryan and fantasy symbols are combined into a single die. The reverses of the coins are either struck from another single die combining Mauryan and fantasy marks, or using a single punch with four taurines round a central dot. The coins were all manufactured when no catalogue of punchmarked coins was available, hence the maker had no knowledge of the Imperial punchmarked system. The metal is alloyed silver and the weights vary from 2.02 to 3.14 grams on five specimens weighed. The rectangular coins are lower weight than the circular ones. On one coin the flan extends beyond the edge of the die revealing that the maker only cut part of the sun symbol. The sharpness of the designs and use of a single reverse punch on the circular coins reveals the use of dies or punches, not casting. More varieties may exist.

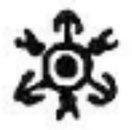
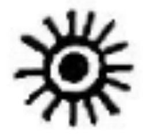
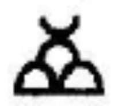
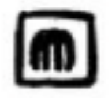
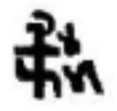
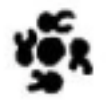
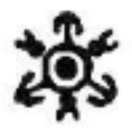
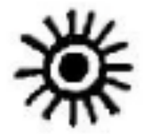
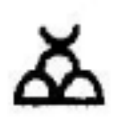
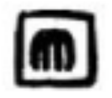
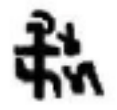
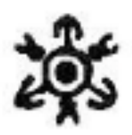
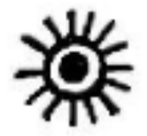
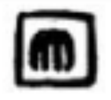
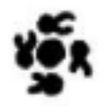
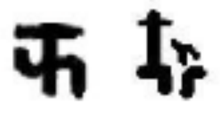
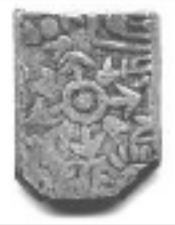
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| VIb<br>*cf* 571<br>Ash, *ex*<br>RF | Obv. |  |  |  |  |  | Rev.<br> | | |
| VIb<br>*cf* 571<br>Ash, *ex*<br>RF | Obv. |  |  |  |  |  | | | |
| *cf*VIb<br>A | Rev. |  |  |  |  |  |  | | |

Table 13: Symbols on diestruck modern forgeries

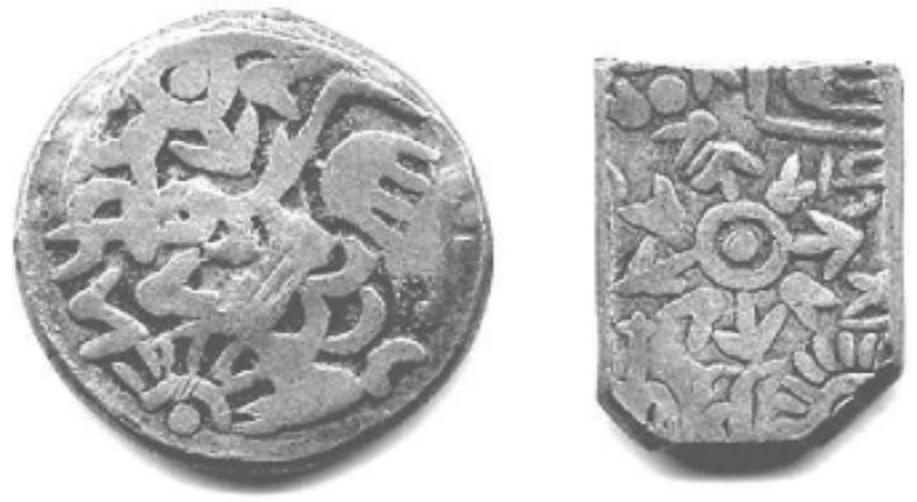


Fig. 22: Enlargements of diestruck modern forgeries.x2.

### Modern Punchmarked forgeries

One of the earliest of the more recent counterfeits was discovered in Varanasi during the 1970s, and 583 of them were deposited in the Bharat Kala Bhavan, Banaras Hindu University. They were fully published by Savita Sharma (Sharma 1992), who was under the impression that they were genuine coins. This was also the opinion of Dr. P.L. Gupta. Subsequently a paper was published showing that they are modern forgeries (Hardaker 1996). See Fig. 23.

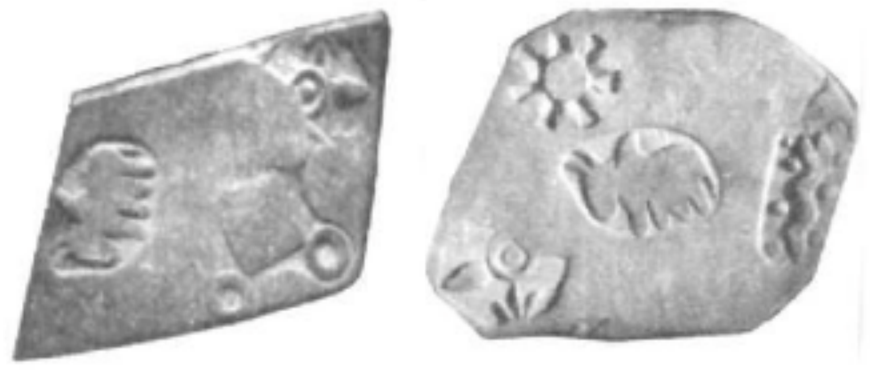


Fig. 23: Samples of 'BKB' type coins. Note the 6-armed symbol is only partially cut on the punch. S/S.

These coins varied in weight from 2.2 to 6.5 grams and the number of symbols varied from one to six. There was no relation between the weights and the number of symbols. Only eight punches were used for the 583 coins, four copied from symbols used in Series I and four other fantasy solar marks. Conclusive proof of their counterfeit nature came from the discovery that the bull punch had also been used on a spurious gold punchmarked coin held in Lucknow Museum (Hardaker 1996). This blatant act of forgery without even the most basic understanding of punchmarked coinage could only have been successful at a time when numismatists were less well informed about the series. All students and collectors should be aware that there were no gold

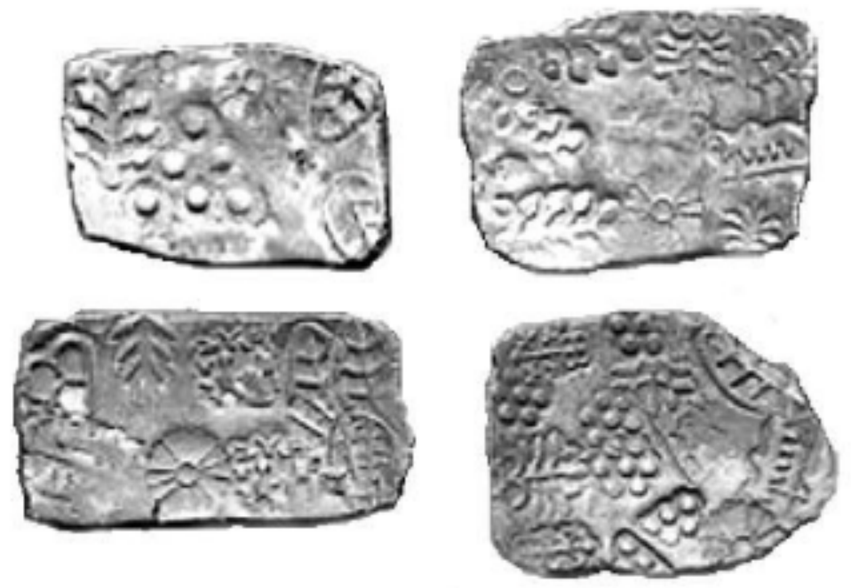


Fig. 24: Samples of large copper forgeries with numerous marks,
a mixture of fantasy and Magadhan symbols. S/S.

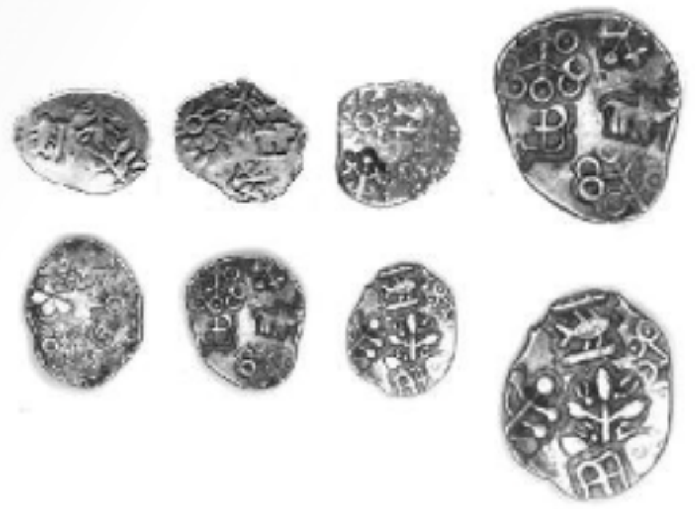


Fig. 25: Small size silver forgeries in style similar to Fig.24, weight about 1 gram. S/S; enlargement on right x2.

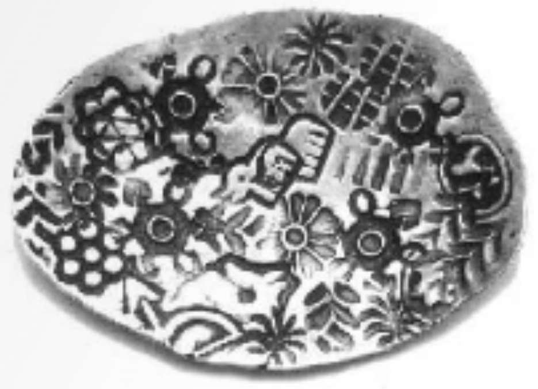


Fig. 26: Large silver forgery from same source as Fig. 24. S/S.

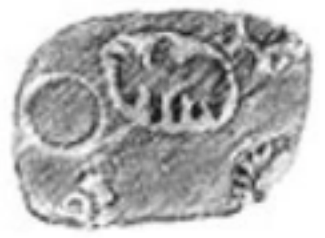


Fig. 27: Imitation *karshapana* from Delhi, pencil rubbing, 1977. S/S.

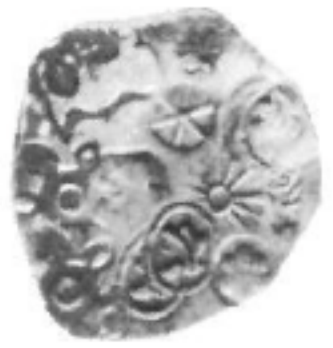


Fig. 28: Imitation *karshapana* with fantasy marks. S/S.

punchmarked coins in the Magadha-Mauryan period. Any that turn up are either modern forgeries or they belong to the Medieval series (see Fig. 43).

In the 1980s a series of large silver and copper forgeries appeared on oval or rectangular saucer-shaped flans (about 20 x 30mm size) containing numerous marks (Figs. 24 and 26). Lower denominations followed (Fig. 25). However few of these were directly imitating Magadha-Mauryan *karshapanas*. Forgers seem mainly to have concentrated on the larger, more spectacular punchmarked coins, or what they thought might pass off as *janapada* coins, which are likely to extract the maximum price from the unwary.

Other suspicious pieces occasionally appear. Fig. 27 is a pencil rubbing of a coin that probably uses the same bull punch as the BKB coins but was seen in the market in 1977 and was of *karshapana* weight and good silver.

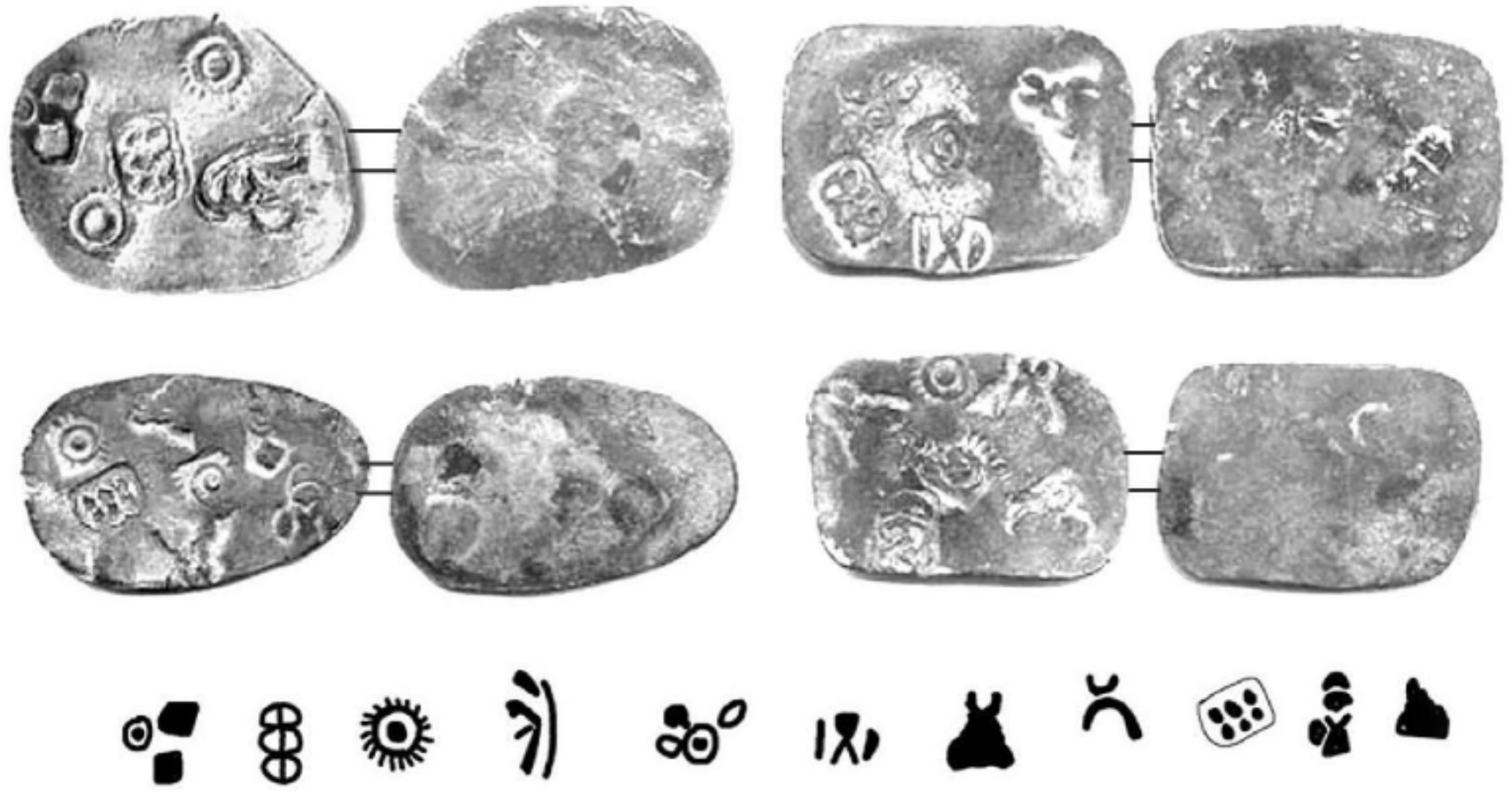


Fig. 29: Forgeries with partially struck-up Mauryan and fantasy marks. Courtesy Alex Fishman.S/S.

Once again the symbol grouping is nonsensical. Fig. 28 shows an imitation *karshapana* with numerous fantasy marks, some repeated, from a different workshop.

Yet another set of forgeries (Fig. 29) shows partially struck up imitations of Mauryan marks combined with fantasies in random arrangements. They vaguely imitate Series VI coins and have appeared in quite large numbers from *c.*2008. Weights range from 3.1 to 4.0 grams. Such coins are easily detected but they show that a forger does not need to know anything about the structure of punchmarked coinage to be able to pass off counterfeit material to an uninformed public.

A further group coins has been described as suspect by Mitchiner (2004, 1357) coming from the so-called Mathura Hoard published by Murphy (2003-4). Their status is discussed in the introduction to Series VIII.

In recent years fewer counterfeits have been evident in the *karshapana* range, but rising prices offer better returns and vigilance is still needed in examining any goods on the open market.

## In this section

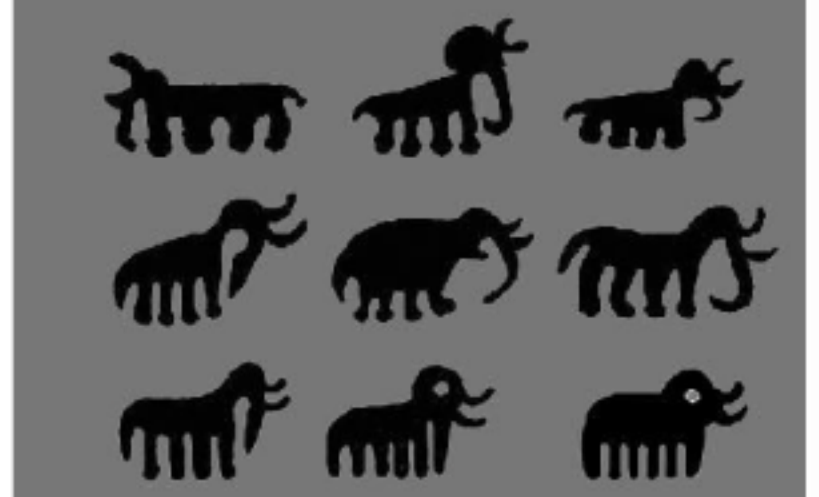
*Identification of punchmarked coins*

*Rarity*

*Series Introductions*

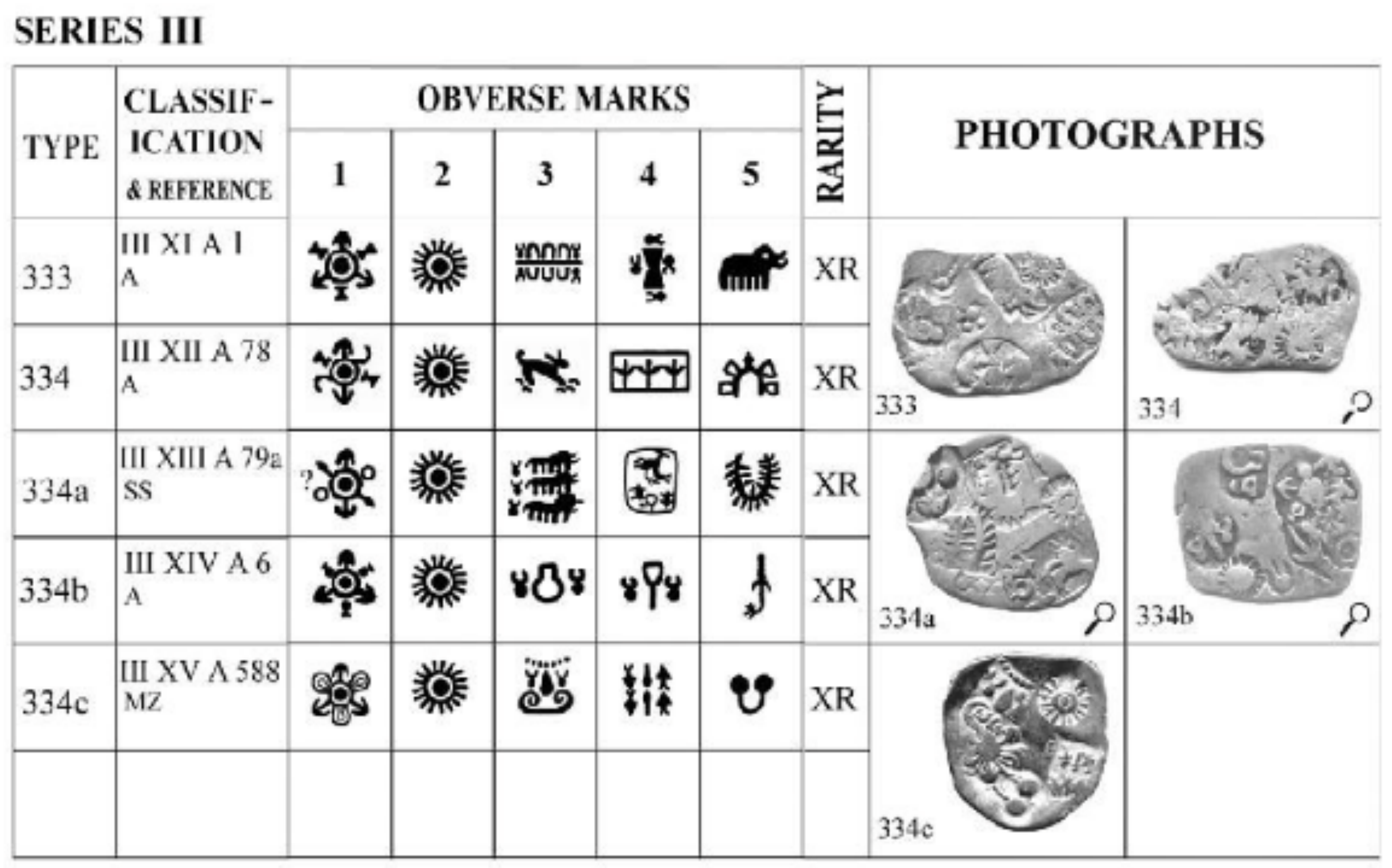
*Catalogue: Series 0 to Series VIII*

*Enlarged photos*



# SECTION 3

# Catalogue



**SERIES III**

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS 1 | 2 | 3 | 4 | 5 | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| 333 | III XI A 1<br>A | | | | | | XR | 333 | 334 |
| 334 | III XII A 78<br>A | | | | | | XR | | |
| 334a | III XIII A 79a<br>SS | ? | | | | | XR | 334a | 334b |
| 334b | III XIV A 6<br>A | | | | | | XR | | |
| 334c | III XV A 588<br>MZ | | | | | | XR | 334c | |
| | | | | | | | | | |

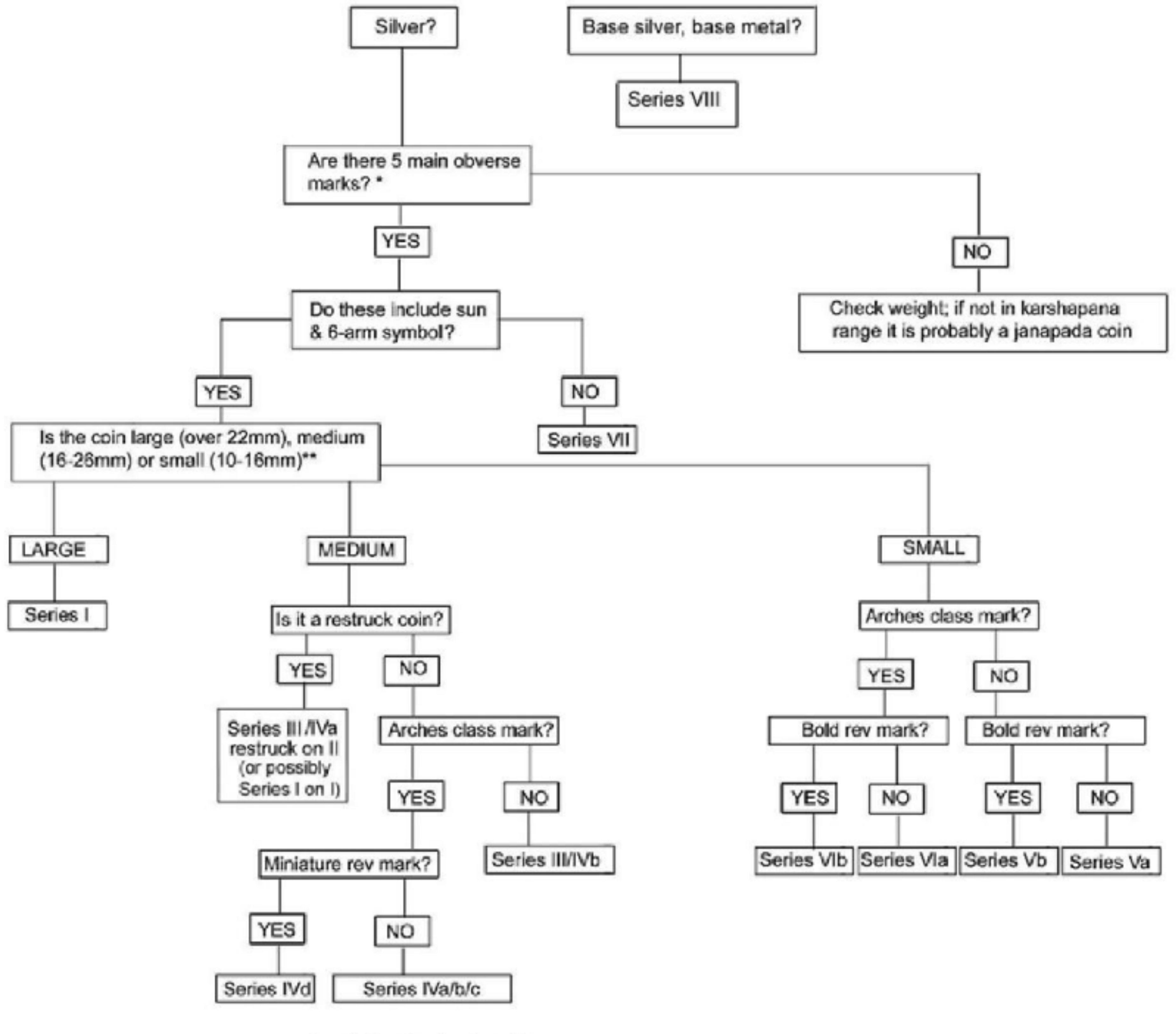
# The identification of punchmarked coins

Collectors and students alike often find it a daunting task trying to identify punchmarked coins. Described here are some approaches which may help. Few punchmarks are seen in their entirety on a coin; they are often only partially struck up, partially off the flan, overstamped with bankers marks, and frequently overlapping one another. Even after following all the methods outlined, the student may find that in an average hoard there is a residue of coins which simply do not seem to belong to any listed variety. In fact, most will belong to a known variety, but the vital clue is elusive. This frustration is not confined to beginners: in the whole range of numismatic literature, there can be no series in which misidentifications so abound; witness the 1936 British Museum Catalogue (see Appendix 7).

Three approaches to aid identification are outlined below.

### *By rarity*

The great variation in the rarity of different types means there is a high probability that the coins most often met with will belong to a limited number of types. These are the ones graded AB (abundant) XC (extremely common) and some VC (very common) in the Catalogue:


Silver?
Base silver, base metal?
Series VIII
Are there 5 main obverse marks? *
YES
NO
Check weight; if not in karshapana range it is probably a janapada coin
Do these include sun & 6-arm symbol?
YES
NO
Series VII
Is the coin large (over 22mm), medium (16-26mm) or small (10-16mm)**
LARGE
Series I
MEDIUM
Is it a restruck coin?
YES
Series III/IVa restruck on II (or possibly Series I on I)
NO
Arches class mark?
YES
Miniature rev mark?
YES
Series IVd
NO
Series IVa/b/c
NO
Series III/IVb
SMALL
Arches class mark?
YES
Bold rev mark?
YES
Series VIb
NO
Series VIa
NO
Bold rev mark?
YES
Series Vb
NO
Series Va

* excluding bankers' marks
** longest dimension but not diagonal

Table 14: Critical path for *karshapana* identifications

In Series III: 305, 320; in Series IVd: 416, 427, 442, 450; in Series Va: 477, 482, 488, 507/8; in Series Vb 518; in Series VIb: 542, 543, 550, 552,566, 568, 570, 571, 574, 575; in Series VII: 591. Conversely, it will be seen that Series I, II, IVa, b, c, and VIa will not be met with frequently, although a few individual types in some of these series are common.

At the same time it is in the nature of punchmarked coins that they comprise a great many scarce or rare varieties that in total may nearly rival the numbers of the fewer common types.

The rarity approach will be less suitable for hoards containing the mainly rare or scarce Series II-IVc, and it will of course be entirely unsuitable when examining hoards of Series I, which contains no common types.

### *By Critical Path*

The second and perhaps best overall approach is by way of the 'critical path' (Table 14). By answering the questions one by one a correct 'path' can be found for any coin which will point to the Series or subseries in which it belongs. It should be noted however that there are certain sizes of coin which may fall in more than one grouping and such coins should be tested along both paths. Also, the test invoking the Miniature reverse marks will only isolate a coin to Series IVd in about 30% of cases.

### *By symbols*

If a distinctive symbol can be seen on a coin (not the sun or six-armed symbol), the symbol lists in the Appendices can be used. Appendix 2 lists all fifth, fourth and third marks indicating on which coin types they appear. Appendix 3 provides a quick route to identification. It lists selected prominent symbols by subject. Use this table to determine the symbol number, then locate it in one of the three tables (of third, fourth or fifth marks) in Appendix 2.

# Notes on the Catalogue

## Rarity

### Rarity of Series 0 and Series I coins

Coins of Series 0 have only appeared in any numbers in recent years. The potential for 'feast or famine' is quite high when dependent on individual hoards turning up. Some, such as Type 03, have seen over 20 coins from a single hoard (Sharma & Hirano 2007). Others such as Type 04 saw over 40 examples in the 1970s but few if any since. In such a volatile situation estimates of the rarity of each type is premature. None of the coins of Series 0 is as yet common; many are still known from single specimens.

For Series I however, sufficient new examples have accumulated in the 29 years since the first edition of this work to allow a limited assessment of the rarity. This is shown in a separate table (Table 15) rather than against each type in the main Catalogue, because all the other 457 types in Series I not listed in this table remain 'XR'. As in later *karshapana* series, there are clearly large issues and small issues. In broad terms this may be seen from the number of different varieties in each class. Class I VI, even though it may only be generically rather than chronologically a single coinage event, stands out as a large issue not only from its 59 different varieties but also from several types which occur quite frequently. The commonest type in Series I in the author's personal tally is Type 95p in the 'Donkey Rider' class, although this is no doubt because there was a hoard in the 1980s, in several batches, that established many new variants in this class. After this hoard dispersed no new examples seem to have emerged, so Table 15 probably overstates the frequency of this class.

| Type | Classification | Rarity |
|---|---|---|
| 7 | I I D 40 | VR |
| 48 | I VI C 1 | R |
| 49 | I VI C 2 | VR |
| 60 | I VI D 1 | R |
| 65b | I VI E 1 | VR |
| 66 | I VII A 28 | VR |
| 72 | I VIII B 1 | R |
| 86 | I XI A 1 | R |
| 89g | I XI B 4 | VR |
| 91 | I XII A 2 | VR |
| 93 | I XII A 28 | VR |
| 95c | I XIII A 29 | VR |
| 95e | I XIII A 35 | VR |
| 95f | I XIII A 36 | R |
| 95n | I XIII A 167 | VR |
| 95p | I XIII A 492 | S |
| 112g | I XVI C 1 | VR |
| 115 | I XVII A 36 | VR |
| 119 | I XVIII B 1 | VR |
| 124 | I XVIII C 2 | VR |
| 126 | I XVIII C 4 | R |
| 132 | I XVIII C 36 | VR |
| 135 | I XIX A 1 | R |
| 146 | I XX A 35 | VR |
| 146d | I XX A 54 | VR |
| 148 | I XXI A 1 | VR |
| 153 | I XXI A 30 | VR |
| 158 | I XXII A 2 | R |
| 160 | I XXIII A 1 | VR |
| 175 | I XXV A 1 | R |
| 188 | I XXVII A 1 | S |
| 189 | I XXVII A 2 | R |
| 192 | I XXVII A 29 | VR |
| 193 | I XXVII A 30 | VR |
| 205 | I XXIX A 1 | R |
| 207 | I XXIX A 4 | VR |
| 209 | I XXIX A 30 | VR |
| 211 | I XXIX A 34 | VR |
| 219 | I XXXI A 1 | R |
| 230 | I XXXII A 28 | VR |
| 231 | I XXXII A 36 | VR |
| 233 | I XXXIII A 1 | VR |
| 237 | I XXXIII A 29 | VR |
| 243 | I XXXIV A 1 | VR |
| 252 | I XXXV A 2 | VR |
| 253 | I XXXV A 3 | VR |
| 264/1a | I XXXVII A 4 | VR |
| 264/1b | I XXXVII A 28 | VR |

Table 15: Rarity of Series I coins – the commonest types

### Rarity of Series II –VIII coins

The estimates of rarity used for the first edition recorded all coins in the Amaravati hoard of 7668 coins, coins in the British Museum Catalogue, various other large published hoards, and a record of some 2000 coins passing in trade from 1970 until the early 1980s. Since then the author continued to note coins passing in trade up to the present, though rather less thoroughly, so the cumulative totals represent one person's record of *karshapana* frequencies in trade for a period of over 40 years. During that time most of the coins encountered have been from hoards that span the range from Series II to Series VII, but occasionally hoards with specific regional flavours have added one-off high numbers of a particular type. At the rare end of the scale a number of types have still shown no examples in trade. Such types may simply be extremely rare, or they might be non-existent, being a mis-identification of the original perceived type. Where this is suspected, the types are left in the catalogue but noted as such. Additionally, rarity assessment has been boosted by the use of the figures published by Errington (2003) which listed numbers of types in several more hoards.

The separate rarities for single and double obverse coins in Series III and IV have been amalgamated in the new edition, thus these estimates generally signal the rarity of the type as a whole. In Series II single obverse coins are much rarer than restruck examples.

The coding that turns numbers into grades has been extended by one category to take account of the greater volume of coins recorded at the upper end. Estimates of rarity in the Catalogue are based on the numbers in Table 16.

| **No of coins** | **Rarity** |
|---|---|
| 1-2 | XR Extremely rare |
| 3-5 | VR Very rare |
| 6-15 | R Rare |
| 16-30 | S Scarce |
| 31-60 | N Normal |
| 61-125 | C Common |
| 126-250 | VC Very common |
| 251-500 | XC Extremely common |
| Over 500 | AB Abundant |

Table 16: Rarity estimates based on the number of coins in the author's count. Thousands of *karshapanas* pass through trade every year without being recorded

The extreme contrast between rare and common types has been observed over too many years simply to reflect the varying influence of different hoards over time. Most types that were rare or common 40 years ago are the same now, but with even greater polarity between the extremes. Clearly, types were issued in greatly varying numbers.

Type rarities are not indicated for Series VIII coins because insufficient data has been collected. However where information is available it is included in the comments section.

## Coin photographs

Photographs for all available types are placed within the main Catalogue and enlargements of selected items are shown in the Enlarged Photos section that follows. Photographs are not included of all reverses, because they do not form a part of the official issues, but where they do (Series Vb, VIb, and VII), examples are shown at the end of each Series. Examples of reverses with bankers marks can be seen amongst the illustrations in the text, e.g. Figs. 2 and 8.

## Symbol drawings

As mentioned under Symbol Variation, accurate representation of the symbols used on punchmarked coins is difficult because the diecutters of the time often did not have the same concept of precision that would apply today. All the symbols have been traced from photographs and drawn by hand.

The slight lack of symmetry that this produces more truly reflects the symbols on the coins. For Series I coins, where variation in symbol form is greatest, an attempt has also been made to draw some of the symbols to match the particular type in question, such as the elephant, rather than adopt a single standard shape.

## Abbreviations used in the Catalogue

References are given for the individual or institution first noticing the type. They are abbreviated as in Table 17. Photos are often from a different source e.g. when improved examples have been recorded subsequently. For a list of photo sources from the First Edition see the 'Preface to the First Edition'. Photos have frequently been updated for the second edition.

| | | | |
|---|---|---|---|
| A | Author | Mac | Macchuatoli hoard, Patna |
| AF | Alexander Fishman | M | Mitchiner Ancient Trade & Early Cge |
| All | Allahabad Museum, Lucknow | Man | Mangrul hoard (JNSI 1957) |
| Am | Amaravati catalogue | Mam | Mambalam hoard, Madras Museum |
| Ash | Ashmolean Museum, Oxford | May | Mayurbhanj hoard, Orissa State Mus |
| Aur | Aurihar Hoard | Mat | Mathura Hoard, Lucknow Museum |
| BA | Bjorn Abels | MB | Michael Broome |
| Bah | Bahal Hoard, POW Museum, Mumbai | MM | Michael Mitchiner |
| Bar | Bargama Hoard, ND 2001 | MtM | Mathura Museum |
| BB | Bryan Birch | MZ | Mir Zakah 1 hoard |
| Bh | Bhir Mound Hoard | Pat | Patraha hoard |
| Bhi | Bhimlipattan Hoard, Madras Museum | PK | Prashant Kulkarni |
| BKB | Bharat Kala Bhavan Mus., Varanasi | PM | Paul Murphy |
| BM | British Museum | PLG | P.L.Gupta |
| Bw | Barwani hoard | PoW | Prince of Wales Museum, Mumbai |
| CB | Colin Bruce | Pr | Durga Prasad |
| Ch | Chandraketugarh hoard, Asutosh Mus. | PT | Pankaj Tandon |
| CV | Carlo Valdettaro | R5 | Rairh Hoard 5 |
| Deo | Deorapatti hoard (R. S. Rawat coll.) | RA | RahanAhamad |
| DM | Donald McIntyre | Rai | Raichur hoard, Hyderabad Museum |
| Fitz | Fitzwilliam Museum, Cambridge | Ram | Rama hoard, Patna Museum |
| FT | FaroukhTodiwalla | RT | Robert Tye |
| Gol | Golakhpur hoard | SS | Sharad Sharma |
| Gul | Gulbarga hoard, Hyderabad Museum | SH | Shinji Hirano |
| Jaun | Jaunpur hoard, Lucknow Museum | T | Trade |
| JL | Jan Lingen | Th | Thathari hoard, Nagpur Museum |
| JPG | J.P.Guenca | Tax | Taxila Hoard, Banaras Hindu Univ. |
| Kar | Karimnagar hoard, Hyderabad Mus. | Ve | Veersigamani hoard, Madras Museum |
| Lal | Lalganj hoard (R. S. Rawat coll.) | Vem | Vembavur Hoard, Madras Museum |
| LD | Lance Dane | | |

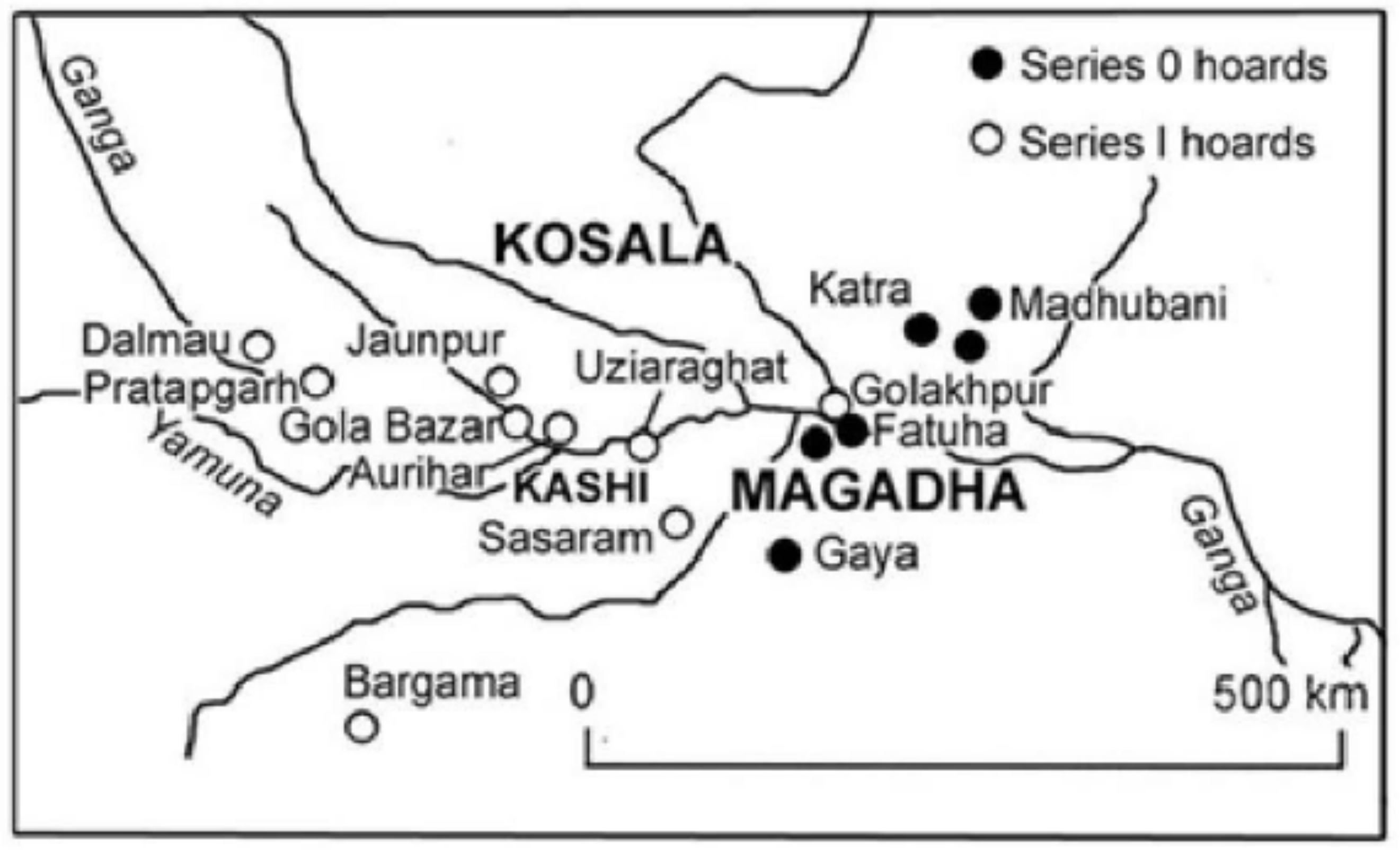
Table 17: Abbreviations used in the Catalogue

## Series 0

The earliest issues of Magadha appear to be single-mark coins struck on weight standards of 7.6 grams with a half-denomination of 3.7 grams, (Hirano 1999-2000). They are known from very few examples only. The six-armed symbol, not the sun, is used as the single mark, and its central position on the flan is repeated on all issues in Series 0 even when additional official marks are added. This has given rise to the suggestion that the six-armed symbol, rather than the sun, should be the 'first' mark in the sequence, not only in this but also in all subsequent Series. The reasons why the single mark coins are placed earliest in the sequence are circumstantial rather than conclusive. Their high weight, thick globular flans, single rather than multiple marks, and great rarity all suggest an early date. In general the earliest coins in any sequence tend to begin in simplicity and progress to greater complexity, as seen in the Classical world where the earliest coins are single-stamp unifacial pieces followed by two-die coins. In this scenario single-stamp coins would come before multiple stamp coins. Possibly in parallel with these issues come very small fractional *mashakas* at 0.30 grams with the six-armed symbol only (Type 0 03) (Sharad and Hirano 2007).

Subsequently a more extended issue of coins with two marks, the six-armed symbol and the sun, is issued on two weight standards, 5.4 grams and 2.34 grams (Types 0 04 and 0 05). The 2.34 grams coins are known from two examples only one of which was weighed, so these coins may be a light weight half denomination of the 5.4 gram standard.

The two-mark 5.4 gram coins are followed by a further issue with three, then four marks but retaining the central position of the six-armed symbol. On all these early coins, bankers marks are seen, usually on the obverse. The distinction between official and bankers marks is not always clear (see Sharma and Hirano 2007) but those marks of larger size that recur on multiple examples have here been counted as 'official'. The range from single mark to four marks suggests that once the earliest coins had been issued, using the single mark, it very soon became necessary to add further marks, and that the progression from one to four (and ultimately five) marks was not instantaneous, but a step-by-step process. The new concept of a silver currency was feeling its way gently in the early years. If the addition of extra official marks was intended to prevent bankers adding their own marks it clearly had no effect, because the number of bankers marks continued undiminished.



Map 5: Series 0 and Series I hoards

The findspots of Series 0 coins, together with those of Series I, are shown on Map 5. The six localities containing Series 0 coins are significantly to the east of the nine Series I hoards. If this were amplified by future finds, it would strengthen the case either for Series 0 and Series I actually being the products of different *janapadas*, or, more likely, Series I being issued at a time when the Magadhan state had already gained territory to the west of the original homeland. The importance of recording provenance for hoards of the early Series cannot be over emphasised.

The next stage in the evolution of Magadhan coinage saw a further reduction in the weight standard to 4.5 grams. This issue continued with the use of four official marks but its duration was short, as indicated by the small number of types and the rarity of the coins (Types 026-029).These were the evolutionary steps that prepared the way for the introduction of the *karshapana* coinage on the standard of 3.4 grams that comprises Series I to VII.

The quality of workmanship in Series 0 is, curiously, often rather better than we see in early Series I. The marks are quite clearly engraved and moderately well struck. The deliberate and consistent placement of the six-armed symbol in the centre of the coin, while the other marks are spaced around it, is abandoned in the later *karshapana* coinages. These observations might prompt the question whether Series 0 is actually the earliest coinage of Magadha. Answering this question has however to take into account other relevant factors. It is known from numerous examples in punchmarked as well as other ancient coinages that unit weights tend to be reduced as time passes; this is particularly true in the formative stage of coinage. The coins of Series 0 (excepting the fractional issues) are all heavier than the *karshapana*, implying an earlier date. Furthermore on some very early Series I coins, we perhaps may detect a hint of retention of the practice of placing the six-armed symbol in the centre of the coin, as though this custom was clung to by mint workmen who had become used to doing it in Series 0 (see for example Types 3 and 4 in the Catalogue of Series I). In Series 0 the number of marks, from one to four, is fewer than on all but the earliest the *karshapana* coins. The findspots are localised, the coins are few in number and do not generally appear in hoards along with *karshapanas*.

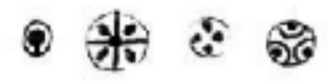
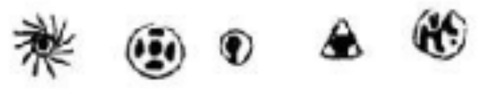
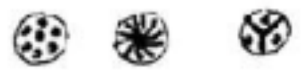
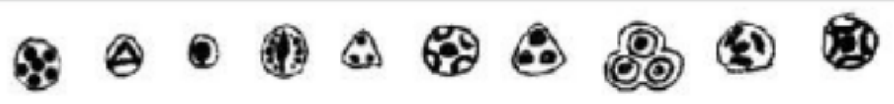
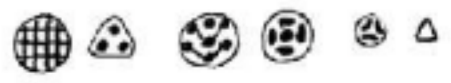
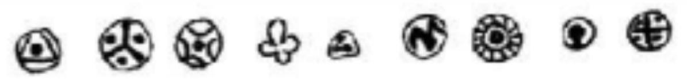
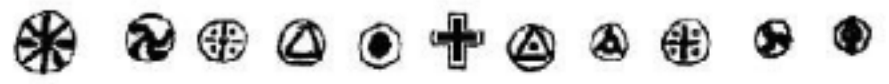
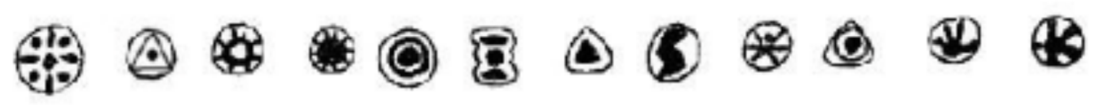
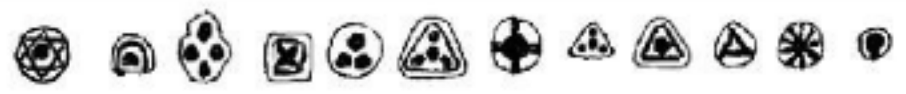
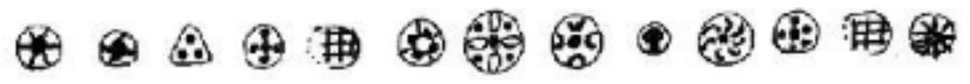
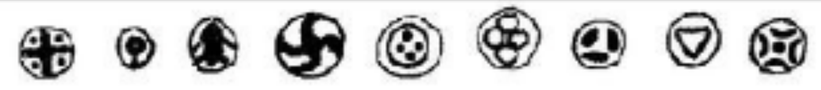
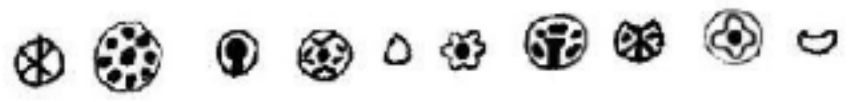
| Coin No. | No. of bankers mks | | Examples of bankers marks (paltry ones not all shown) | Comment |
|---|---|---|---|---|
| | Obv | Rev | | |
| 716 | 2 | 4 |  | Smallest no. of extra marks |
| 717 | 7 | 2 |  | Spiral sun on obv chisel marks on rev. |
| 719 | 9 | 1 |  | Spiral sun on obv. |
| 720 | 8 | 17 |  | |
| 722 | 7 | 6 |  | |
| 723 | 7 | 9 |  | Chisel marks on rev. |
| 724 | 10 | 10 |  | |
| 725 | 12 | 12 |  | |
| 726 | 13 | 20 |  | Largest no. of extra marks |
| 727 | 8 | 11 |  | |
| 735 | 13 | 17 |  | |
| 747 | 8 | 11 |  | |

Fig. 30: Examples of bankers marks on selected coins of Type 04 from a hoard of 44 coins recorded in 1973.

It would thus appear that in this case better execution is not an indication of later date, but due to some other factor, perhaps a different method of manufacture involving greater annealing, or 'hot striking', i.e. impressing the punches while the flans were close to melting point. Many of the coin flans in Series 0 01, 0 02 and 0 04 appear to be flattened globules that were first poured while molten from a ladle. The coins of Series I are undoubtedly cold struck. This may be a salutary warning of the danger of assuming 'better is later' without other supporting evidence.

In summary, the key identification points for non-fractional denominations in Series 0 include their high weight, presence of fewer than five official marks, central position of the six-armed symbol, and their large size. Type 0 04 averages 25mm while later types vary from 25 to 29mm. The fractional denominations are of course smaller and lighter, but they retain the central six-armed symbol.

Apart from the sun and six-armed symbols, the marks used on Series 0 coins are subsequently almost always dropped, although living creatures such as the frog, fish and bull, some twig-like symbols, and the ball-with-dots (mark 500, Fig. 32) are re-adopted in different guise later on (marks166 and 151). Some intriguing designs occur, including mark 508, which appears to be a headless human figure (although more likely, inverted, it might be a candelabrum). Marks that have no obvious parallel in present-day society include 503, 511, 513, and 517. There appears to be very little cross-fertilisation between Series 0 and other early *janapada* issues; one exception is the large flower with eight petals (mark 524).

### Dr. Gupta's view on Series 0

In 1994 (Numismatic Digest, 1-18) Gupta classified the Magadha coinage into six 'Types'. He used this word to avoid confusion with 'Series' used in the first edition of this work and 'Period' used in his Amaravati Catalogue. His paper was prompted following the publication by Kothari's (1993) paper of the unrecorded four-mark coins of Series 0 from Katra. Gupta listed his periods as follows: Type VI are the regular *karshapanas* which we class as Series I to VII, save for the Golakhpur coins with only four marks which he called Type V. Types IV to I belong to the present Series 0. Type IV corresponds to Series 0 coins of the 4.5 gram weight standard (Types 026 –029 in the present Catalogue), Type III are coins of the Katra Hoard type of 5.4 grams weight standard (Types 013 – 015 and 017 in the present Catalogue).. Type II comprises the two-mark coins classified here as 04 on a weight standard of 5.4 grams. Gupta had examined a hoard of these in the 1970s and noticed that the six-armed symbol was invariably placed in the centre. He was tempted to count some of the bankers marks on these coins as official, but as he himself admits, he saw the coins only briefly and could not examine them in detail. The 44 coins of this type seen by the present author in 1973 showed that there was only one additional official mark on the obverse, the sun, which was consistent on all examples, whereas the other marks were all bankers marks (which also occur on the reverse). Samples of the original drawings of these bankers marks, made while the hoard was to hand, are reproduced in Fig. 30. They are small, and seldom repeating. Later discoveries of coins of this class with genuine additional third and fourth marks show they are usually larger, more frequently repeated, and more substantial, although even here there are occasional symbols that might be either bankers or official.

The weight range of the hoard of 44 coins varied from 4.18 to 5.9 grams (Fig. 31). The graph shows an unusual spread, interpreted by Gupta as representing an issue where weights were not struck to a fixed standard. However he failed to take note that half the coins were corroded, some very badly so, and it is this that chiefly accounts for the unusual number of lower weight coins. The weight standard was around 5.4 grams but weight in these early issues was not so carefully controlled, as shows up from two coins weighing over 5.8 grams. This is also evident from the hoard of Series 0 coins published by Sharma & Hirano (2007) where the weight range of 52 coins of Types 0 03 – 008 ranged from 4.5 to 5.4 grams but with strays at 4.1 and 5.8 grams. We may thus expect a contributing factor to the wide weight range was poor control at the mint, rather than no fixed standard.

### Dr. Gupta's view on Series 0 contd.

Following on from his conclusion that coins had been issued with no weight standard, Gupta then found a parallel in the coins published by Sharma (1992), classed as Type 1, in which both weights and numbers of punchmarks varied in a random fashion. I have since shown that these coins are quite clearly modern forgeries (Hardaker 1996); see Fig. 23 in the section under Wayward Coins. Thus Gupta's hypothesis that there was a period in punchmarked coinage when neither the number of punches nor the weight standard was fixed cannot be upheld. Indeed it would be difficult to find any such situation amongst precious metal issues at any period, as it would negate the very purpose of coinage.

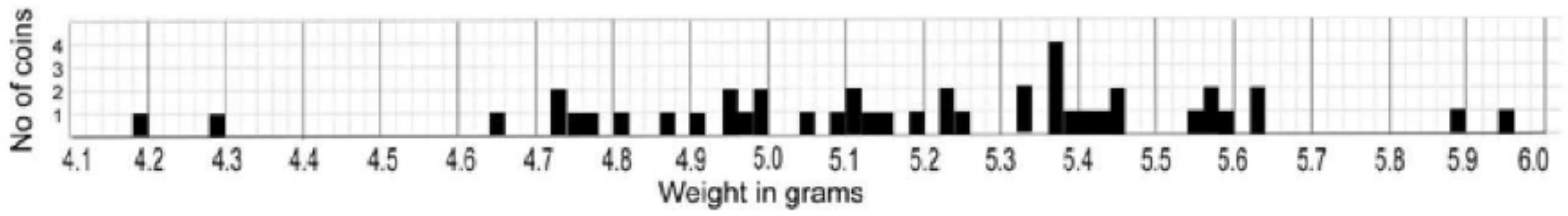


Fig. 31: Weights of 44 coins of Series 0 04

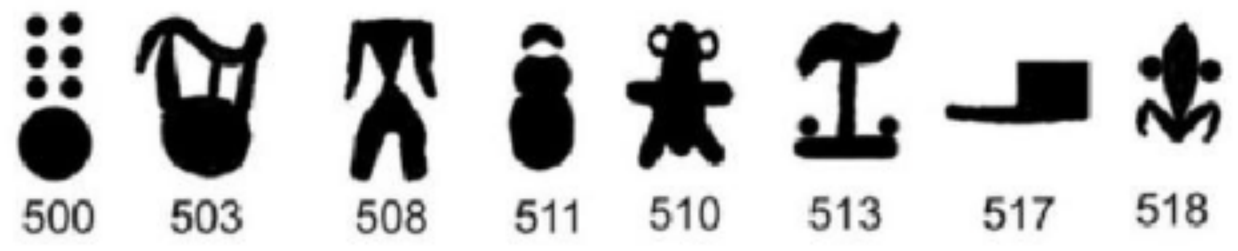
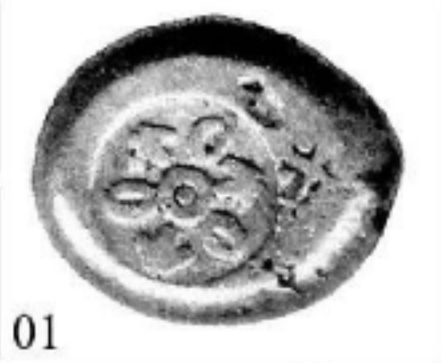
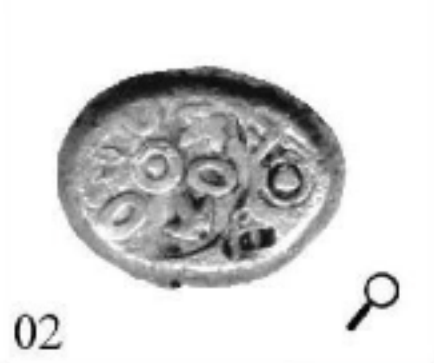
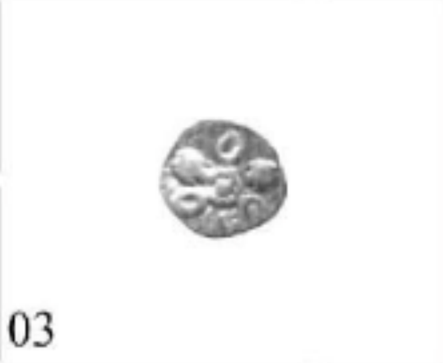
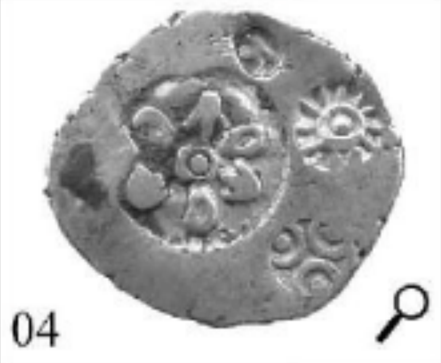
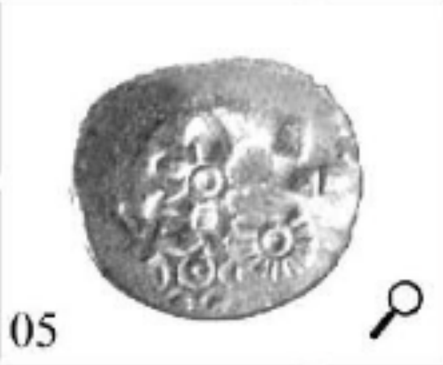
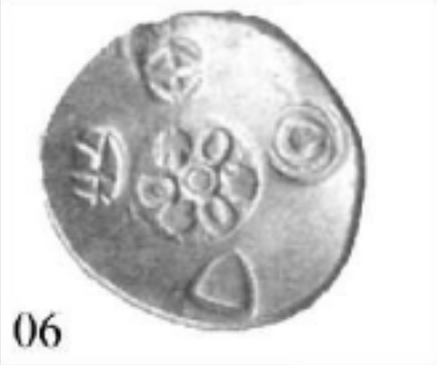


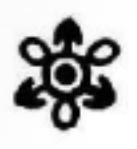
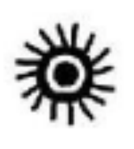
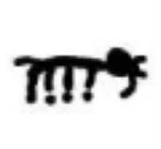
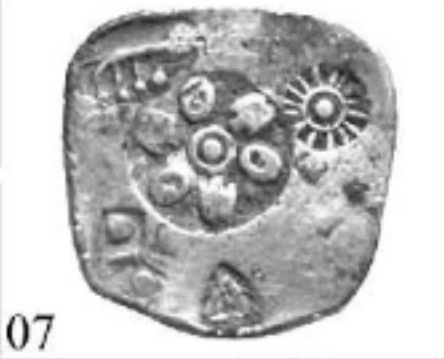
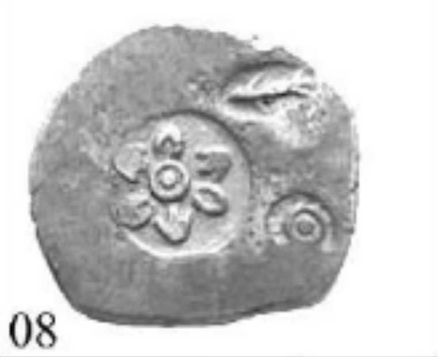
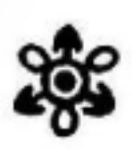
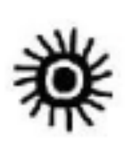
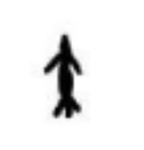
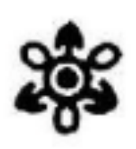
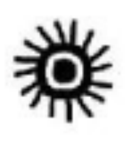
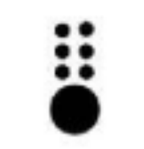
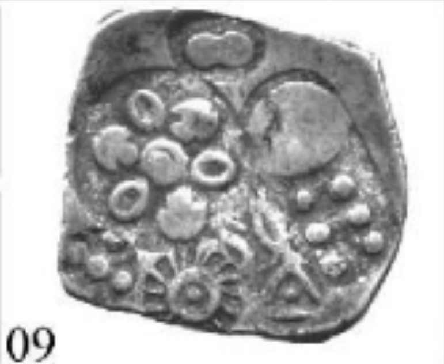
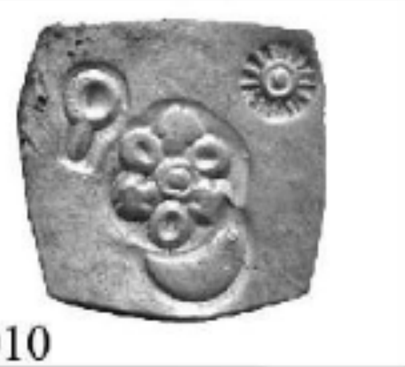
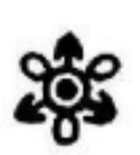
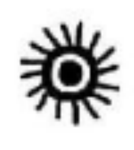
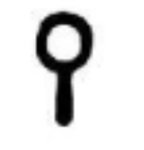
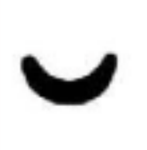
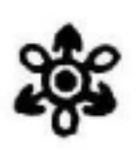
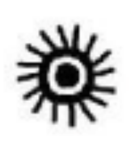
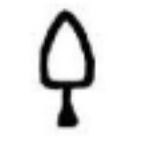
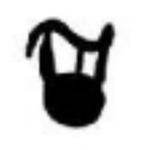
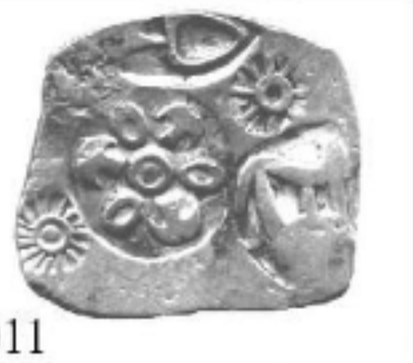
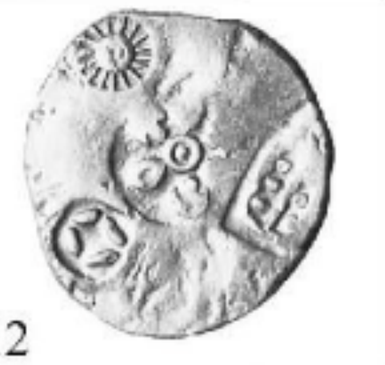
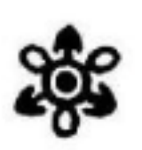
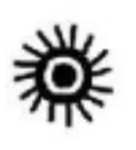
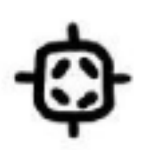
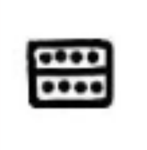
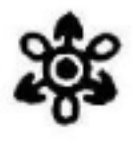
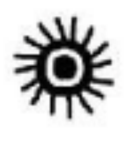
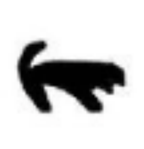
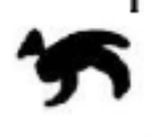
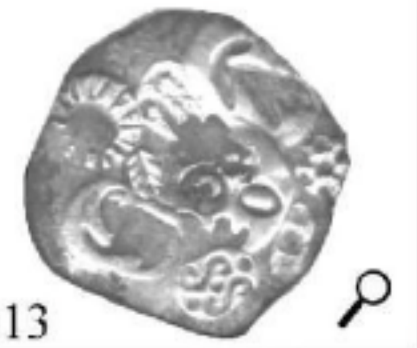
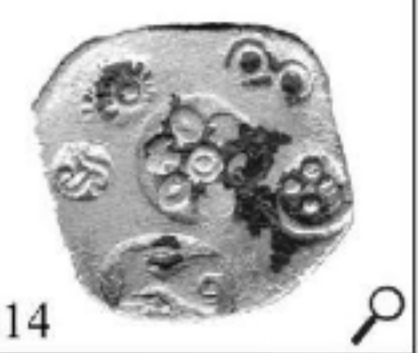
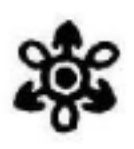
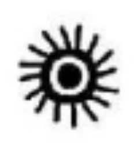
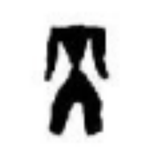
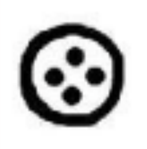
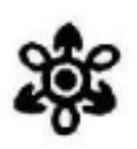
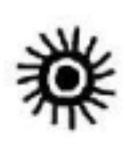
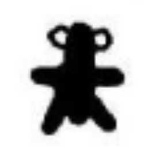
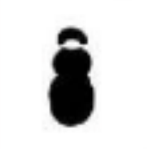
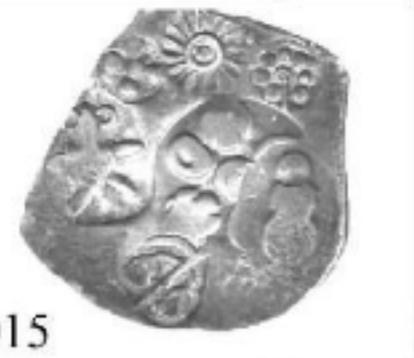
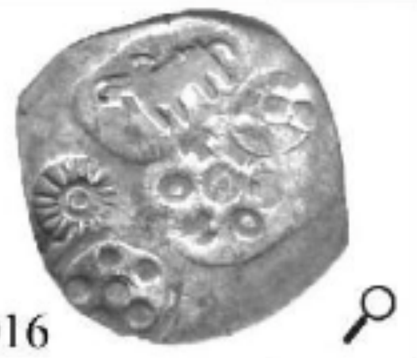
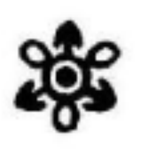
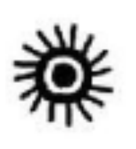
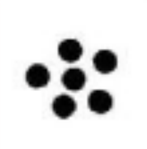
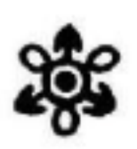
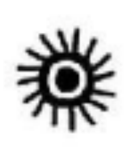
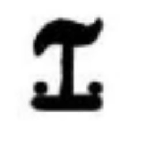
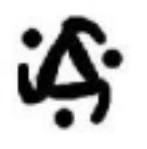
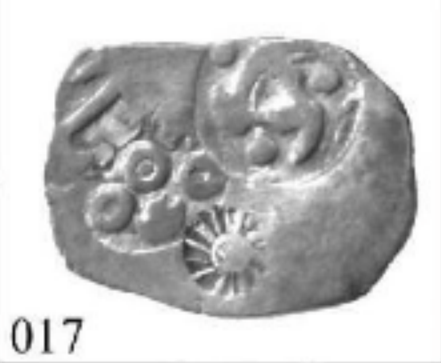
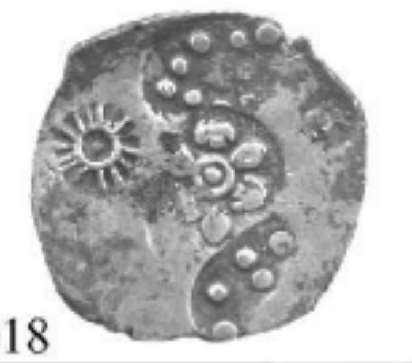
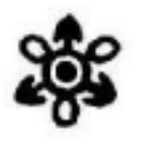
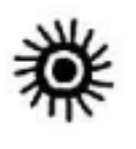
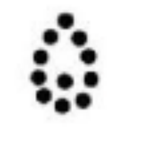
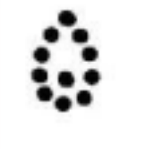
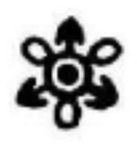
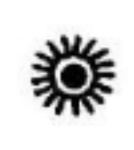
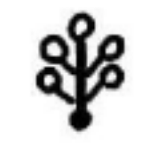
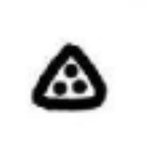
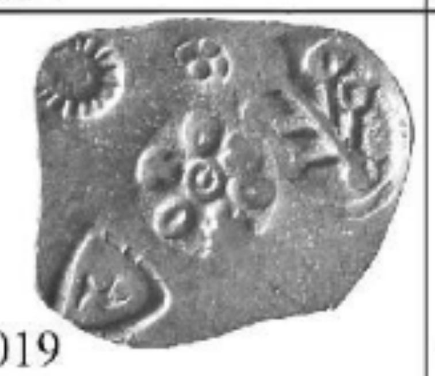
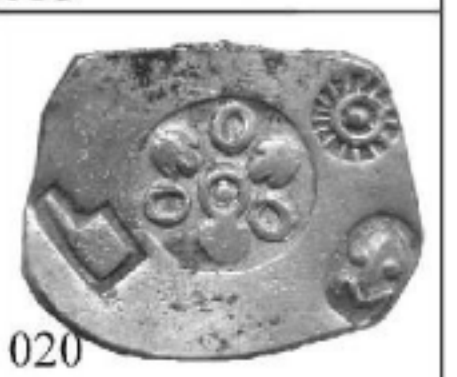
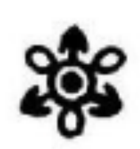
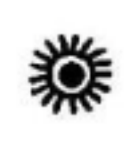
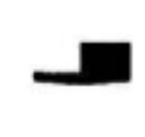
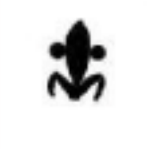
Fig. 32: Selected symbols from Series 0.
Mark 510 probably represents a turtle and 518 a frog

## SERIES 0 Catalogue

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS 1 | 2 | 3 | 4 | Wt. std. | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| 01 | 0 I A<br>ND 1999-2000<br>ND 1993[1] | ✿ | - | - | - | 7.0-7.6 |  01 |  02 |
| 02 | 0 I B<br>ND 1999-2000 | ✿ | - | - | - | 3.8 | | |
| 03 | 0 I C<br>Sharad & Hirano<br>2007 | ✿ | - | - | - | 0.2-0.3 |  03 |  04 |
| 04 | 0 II A<br>A, Coin Hoards<br>1977 | ✿ | ☀ | - | - | 5.4 | | |
| 05 | 0 II B<br>Sharad & Hirano<br>2007 | ✿ | ☀ | - | - | 2.34 |  05 |  06 |
| 06 | 0 II C<br>Sharad & Hirano<br>2007[2] | ✿ | - | ◎ | - | 5.4 | | |

[1] Kothari (1993) refers to 80 coins of this type weighing *c.* 7.0 grams. [2] Two coins both missing the sun symbol, just possibly a mint error.

## SERIES 0 Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | Wt. std. | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | | | |
| 07 | 0 III A<br>Sharad & Hirano 2007 |  |  |  | - | 5.4 |  07 |  08 |
| 08 | 0 III B<br>Sharad & Hirano 2007 |  |  |  | - | 5.4 | | |
| 09 | 0 IV A<br>SS, Mitchiner 2722 |  |  |  | | 5.4 |  09 |  010 |
| 010 | 0 IV B<br>BM, SS 2006 |  |  |  |  | 5.4 | | |
| 011 | 0 IV C<br>BM, SS 2008 |  |  |  |  | 5.4 |  011 |  012 |
| 012 | 0 IV D<br>BM, RT |  |  |  |  | 5.4 | | |
| 013 | 0 IV E<br>Kothari 1993, SS, JPG |  |  |  |  [1] | 5.4 |  013 |  014 |
| 014 | 0 IV F<br>Kothari 1993, JPG |  |  |  |  | 5.4 | | |
| 015 | 0 IV G<br>Kothari 1993, JPG |  |  |  |  | 5.4 |  015 |  016 |
| 016 | 0 IV H<br>JPG, SS 2008 |  |  | |  | 5.4 | | |
| 017 | 0 IV J<br>Kothari 1993, JPG |  |  |  |  | 5.4 |  017 |  018 |
| 018 | 0 IV K<br>A |  |  |  |  | 5.4 | | |
| 019 | 0 IV L<br>BB, SS 2008 |  |  |  |  | 5.4 |  019 |  020 |
| 020 | 0 IV M<br>SS 2006 |  |  |  |  | 5.4 | | |

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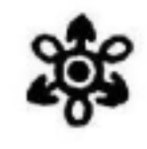
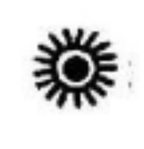
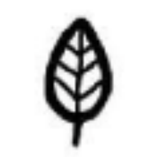
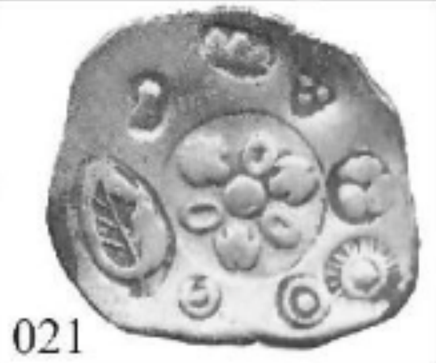
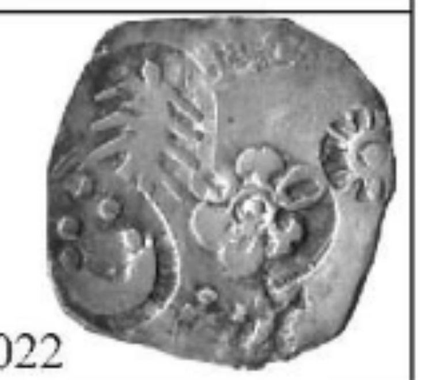
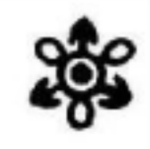
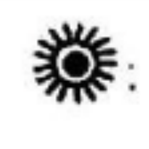
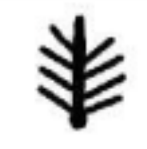
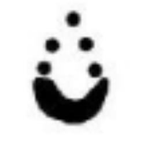
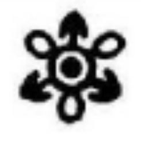
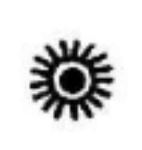
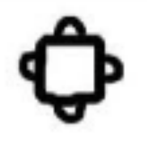
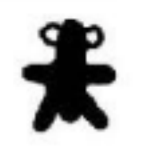
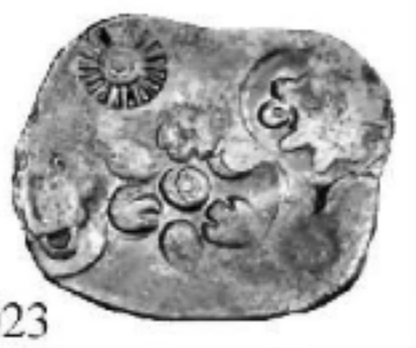
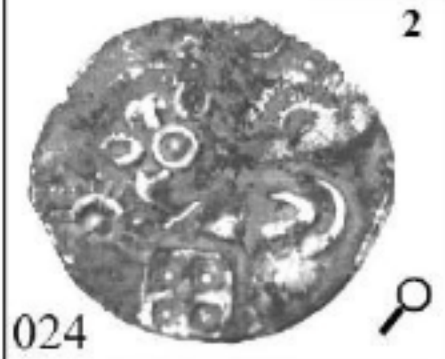
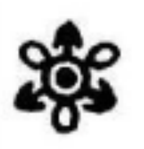
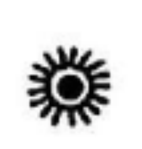
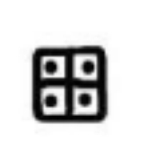
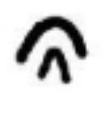
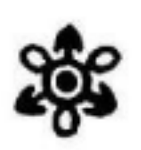
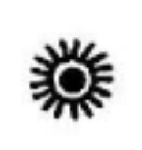
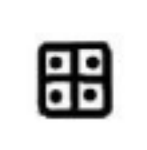
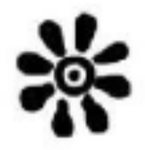
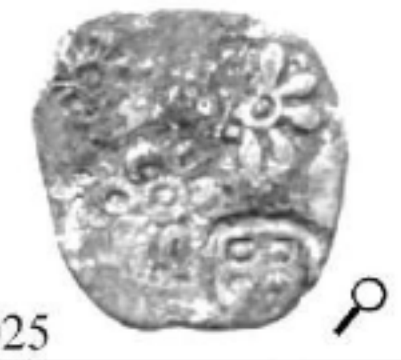
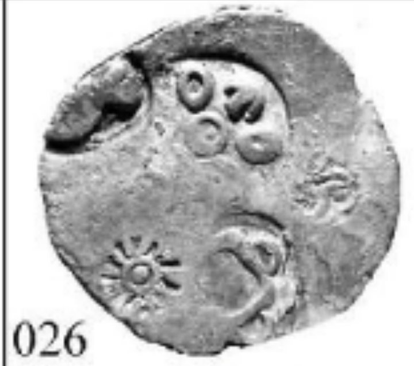
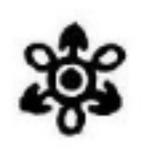
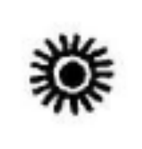
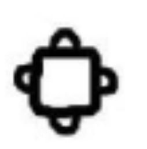
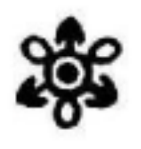
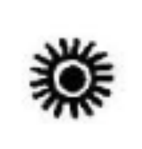
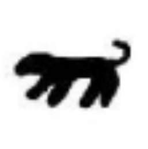
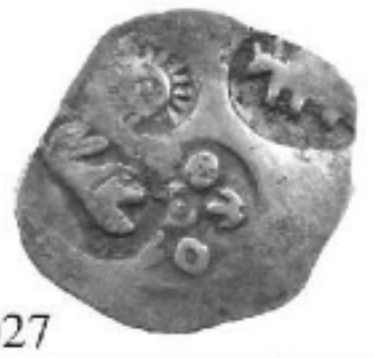
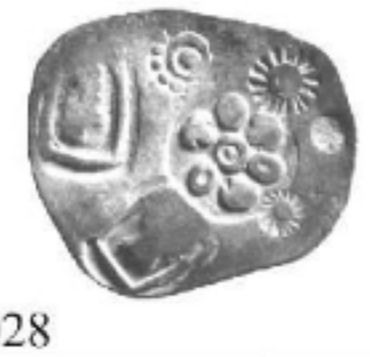
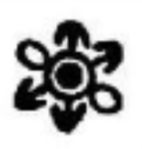
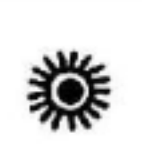
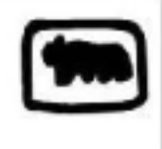
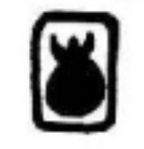
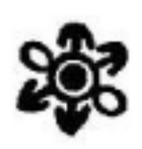
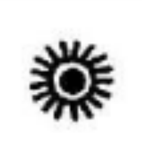
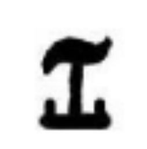
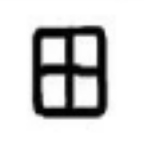
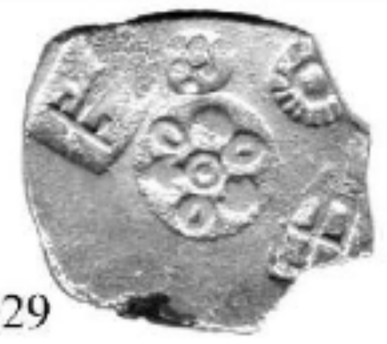
[1] The form of this mark varies, see enlarged photos section.

## SERIES 0 Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | Wt. std. | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | | | |
| 021 | 0 IV N<br>Sharma & Hirano 2007 |  |  |  | [1] | 5.4 |  021 |  022 |
| 022 | 0 IV P<br>SS |  |  |  |  | 5.4 | | |
| 023 | 0 IV Q<br>A |  |  |  |  | 5.4 |  023 |  024 [2] |
| 024 | 0 IV R<br>A |  |  |  |  ? | 5.4 | | |
| 025 | 0 IV S<br>Mitchiner 2778 |  |  |  |  | 5.4 |  025 |  026 |
| 026 | 0 V A<br>A |  |  |  | | 4.5 | | |
| 027 | 0 V B<br>Mitchiner 2779, A |  |  | |  | 4.5 |  027 |  028 |
| 028 | 0 V C<br>LD |  |  |  |  | ? | | |
| 029 | 0 V D<br>SH |  |  |  |  | 3.92<br>chipped |  029 | |

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[1] Although this mark is small it recurs on all 40 coins published by Sharad & Sharma and is thus classified as the official fourth mark.

[2] This coin was uncleaned on inspection; the fourth mark is incompletely drawn.

# Series I

Series I heralds the introduction of the new *karshapana* weight standard of 3.4 grams, which was to continue to the end of the Mauryan/Sunga silver punchmarked series. Starting with four-mark coins of poor workmanship, it slowly evolves into a well-rehearsed five-mark system which forms the basis for all subsequent Series.

About half the total number of types of the Magadha-Mauryan *karshapana* coinage now belong in Series I, where new discoveries over the past 30 years have nearly doubled the types known, even though many types are still represented by single specimens. Although this process of discovery is certainly not complete, our increased knowledge enables a better, though interim, attempt to be made to uncover more of the chronology within this large Series.

Most of the coins are easily identified by their large flans. Bankers marks occur, often quite large, on the reverse and occasionally on the obverse, where on very early coins they are difficult to distinguish from the fifth official mark. The recorded findspots (Map 5) are either concentrated close to the assumed original homeland of Magadha (centred on modern Patna), or further to the west where most scholars would place the *janapada* of Kashi (e.g. Aurihar). Although the number of findspots of Series 0 and 1 is so far insufficient to draw firm conclusions, there may be evidence here for at least part of the issues of Series I coins dating to the period after Magadha conquered Kashi. In the few instances where Series I coins are found with later Series they are usually in much worn condition, but Series I coins generally are seldom worn, suggesting their time in circulation was relatively short, despite the large number of types.

With its enlarged repertoire, which also includes many more examples of restruck coins, Series I now assumes greater historical importance, offering salient commentary on the economic and social conditions in the embryonic Magadhan state, at the beginning of its imperial expansion. Together with Series 0, it represents that intriguing stage in the development of a technology where new ideas are being pioneered prior to settling down into a more standardised format, as adopted in Series II onwards. Thus we see early bungled attempts at punch cutting, inept attempts to strike the punches fully into the flans, use of wrong punches, a hesitant introduction of a fifth official mark, and the gradual emergence of a range of 'long-life' fifth marks which come to characterise all later coinage. We watch the technical competence of coin production steadily grow; with some laggard mints, and we note the confusion resulting from money having to be withdrawn and restruck. We see, too, parallels with the coinages of the neighbouring *janapada* states, such as Kosala, still functioning as independent political entities. All the time the practice of adding bankers marks to the coins continues, both in Magadha and in all the other *janapada* states, turning the task of identification of coins into a specialised occupation which perhaps might have given rise to a trading guild of its own. The expansion of coinage undoubtedly reflects a growth in commerce which was perhaps a contributing factor in motivating the political conquests that were about to begin.

## Chronology within Series I

The criteria that can be used to separate Series I into chronological groups are:

1. Presence/absence of fifth marks
2. Style of elephant
3. Style of sun symbol
4. Form of six-armed symbol
5. General stylistic differences
6. 'Lives' of fifth and other marks
7. Restruck coins
8. Hoard evidence

The broad chronological groupings are established with reasonable certainty from the evidence of hoards and restruck coins in Series I. To test and refine this, items 1, 2, 4, 5, and 8 above, as well as some information from hoards, were evaluated using a scoring system, explained in more detail below. This combination of evidence has enabled a breakdown of Series I into five chronological 'Phases'. Further, within Phase 4 three separate restriking periods are discernible. Where the numerical scores are at odds with the more incontrovertible evidence from restriking and hoards, appropriate adjustments are made, so in the final table of chronology (Table 22) the numerical scores do not appear in a smooth ascending order, but their general concurrence is preserved.

The techniques used to discern chronology are now considered one by one.

### 1 Presence/absence of fifth marks

The *karshapana* coinage followed on from Series 0 which had developed from single mark coins to progressively two, three and four mark coins. The presence of *karshapana* coins with two, three or four official marks in the Golakhpur hoard suggests that the earliest Series I *karshapanas* had fewer than five marks.

### 2 Style of elephant

By scanning and tracing the form of some 90 elephants from coins in Series I and comparing with later Series, a picture was built up of three basic styles of elephant (Fig. 33). From examples in hoards of early date, such as Golakhpur, the earliest form of elephant is seen as of very crude construction, the head comprising a ball hardly connected to the neck, from which the tusks protrude as an arc and the trunk is hooked and of variable length. Slightly later the head becomes larger. The intermediate elephant is more fluent but styles vary; the head merges more realistically with the body often with a large arching trunk. The legs continue to have large ball-shaped feet and the tails remain short; the trunk is still not parallel to the legs. The third style has its origins in Series II. The legs have almost lost their ball-like feet, and from Series III onwards the trunk is parallel to, and the same length as, the legs, and the tail is also the same length as the legs, which have stub ends. Thus the lower part of the elephant looks as if it just has six equal stumps. From this time also there is usually an eye in the head.

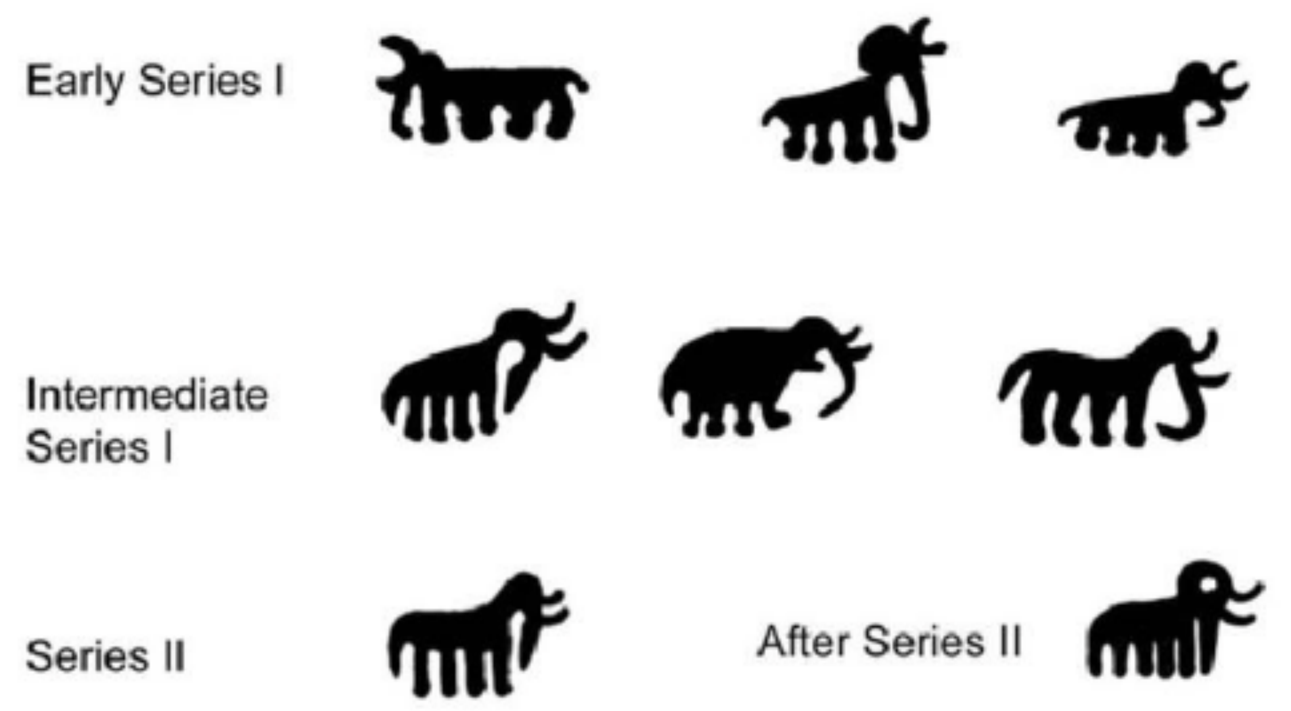


Fig. 33: Taming the elephant: selected examples of typical elephant symbols. Series II shows a style transitional between Series I and Series III, but Series III style is sometimes also used in Series II

### 3 Style of the sun symbol

The sun takes three forms on *karshapana* coinage: oblique rays (Fig. 34(b)), straight rays (Fig. 34(c)) and a 'hybrid' small sun with rays that are shorter and often only slightly oblique (Fig. 34(a)). Series 0 mostly uses the straight-rayed sun but often with quite short rays. The straight-rayed variety is often seen on classes in Series I where the other marks have a maturity of workmanship associated with the latter part of this Series, and oblique suns are frequently seen on coins where the engraving work is poor. Thus it may be argued that oblique-rayed suns may indicate an earlier date, especially when seen in conjunction with other early features. Nevertheless, exceptions to this rule are occasionally seen. The oblique form disappears from Series II on.

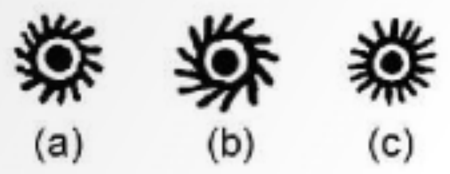

(a) (b) (c)

Fig. 34: The three basic forms of the sun
(a) is like (b) but with shorter rays

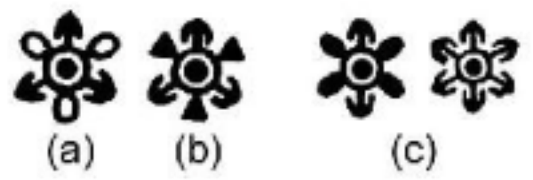

(a) (b) (c)

Fig. 35: Early forms of six-armed symbol.

## 4 Form of the six-armed symbol

The earliest coins of Magadha (Series 0) use a form of six-armed symbol comprising alternating arrows and ovals (Fig. 35(a)). The Golakhpur hoard also uses this form. At a later time, while the three arrows are retained, new alternating symbols are introduced, such as dots or triangles (Fig. 35(b)). Finally six-armed symbols are seen where the alternating sequence of three arrows and three other shapes is abandoned, presumably because all the permutations considered relevant had been used up. Examples of these more liberated forms are shown in Fig. 35 (c). While the early form is not necessarily abandoned after other forms are introduced, its presence hints at an early date for any type using it. It is noteworthy that throughout the Magadha-Mauryan coinage, including Series 0, six-armed symbols always contain at least two arrows. This, along with the presence of the sun symbol, is the most enduring feature of the coinage.

## 5 General stylistic differences

In addition to the specific stylistic attributes discussed above, close study of the coins of Series I reveals other subtle changes in style which may contribute to the chronological picture. It is not only the elephant symbol that evolves. Variation is seen in the skill with which punches are cut, how well they are struck, and the care with which they are placed on the flans in relation to one another. Once again the question is whether these differences represent a timeline of evolution as mint workmen gradually improved their skills, or whether it is explained by the operation of a number of different mints with varying skills running parallel in time, or both.

We have seen the evidence for local styles in Series I XIII ('Donkey Rider') and I XXXVIII ('monkey'). Despite this and the observation that some coins in Series 0 are better produced than some in early Series I, the broader picture shows a general progression from tentative to assured from early Series I onward, as ever more attention is paid to detailed precision. Small things, such as the delay in the introduction of the taurine symbol into the six-armed symbol until Series I Phase 5, corroborate the sequence proposed.

## 6 Long-life marks

It has been mentioned that throughout the *karshapana* coinage, fifth marks, and some others, may recur over long periods, transcending the different Series. These are termed 'long-life marks', as described under the heading Duration and Recurrence. Their 'births' and 'deaths' may provide important evidence for chronology. Other fifth marks occur only once or recur on just a few types. This phenomenon begins in Series I where about eight symbols recur over many classes. Yet several classes, often those which show other signs of an early date, omit these long-life marks; they may be the types issued before the concept of long-life marks was introduced. Four of the marks having continuity in Series I also continue in use in subsequent Series – marks 1, 2, 3 and 4.

## 7 Restruck coins and their association with local mints

The evidence from restruck coins in Series I is complex and still represents 'work in progess'. Restruck coins in this Series provide information on six different levels: (1) chronological, (2) evidence of three separate restriking phases, (3) stylistic evidence,(4) possible absence of fifth marks, (5) hoard evidence, and (6) restriking over coins of other *janapadas*. These are examined in turn below.

(1) Chronology. Where one class overstrikes another the chronological sequence between the two is incontrovertible. But there is no lateral chronological evidence: it only dates one class against another.

(2) Three separate restriking phases. There are three classes, I VIII A, I XI A, and I XVIII A, which overstrike and then are subsequently themselves overstruck by other classes. (I XIII also does this but also restrikes the same types on itself, see (3) below.) Table 18 lays out the overstrikes by class/group categories in this phase and defines five chronological periods from three separate restriking phases. Table 19 shows the individual types that restrike in Series I.

(3) Stylistic evidence may be used to identify possible local mints. Class I XIII, the 'Donkey- Rider' class, is struck in a distinctive unrefined style, possibly using slightly debased silver, and its pool of coins for restriking is different from those used in the other restriking phases, save for class I X (see Table 19). A separate regional mint is implied.

| Class | overstrikes | is over struck by | giving the chronological sequence | | | | | |
|---|---|---|---|---|---|---|---|---|
| I VIII A | I III | I XI A, I XII A | ***1*** | I III | ***2*** | ***I VIII A*** | ***3*** | ***I XI***, I XII A |
| I XI A | I VI C, I VI D, I VIII A, I IX A, I X, I XI B, XIV A & B, I XVI C, I XX A | I XII A, I XVIII A | ***2*** | I VI C, I VI D, ***I VIII A***, I IX A, ***I X***, I XI B, I XIV A & B, I XVI C, I XX A | ***3*** | ***I XI A*** | ***4*** | I XII A, ***I XVIII A*** |
| I XIII | I IV B, I VI A & D, I VIII B, I X | I XIII | ***2*** | I IV B, I VI A, I VIII B, ***I X*** | ***3*** | I XIII | **?** | I XIII |
| I XVIII A | I VIII B, I XI A & B<br>I XVII | I XXXVIII | ***3*** | I VIII B, ***I XI A***, I XVII | ***4*** | ***I XVIII A*** | ***5*** | I XXXVIII |

Table 18: The chronology from classes I VIII A, I XI A,I XIII and I XVIII A. Links are shown in *bold italic.*
Note all the restriking appears to be conducted within Phase 4 of the chronology as shown in Table 22 below

Class I XIII was identified (somewhat incorrectly) from a single coin in the first edition of this work. It is now known to the author from over 80 examples, all emerging in the 1980s though not necessarily from a single hoard. It is an extraordinary class not only because it appears to display a donkey with a rider, but also in being almost invariably overstruck. Moreover, although it does overstrike on other types (I IV B, I VI A, I VIII B and I X A) the majority of old obverses are of the same class, and sometimes possibly of the same variety, as the new one. This dispels the idea that restriking always had a political or dynastic significance. Clearly a ruler overstriking his own coins could not be signifying a vanquished opponent. The restriking of I XIII on itself does not of course prove other restrikes in *karshapana* coinage were not dynastic, it only indicates this was not always so. But at least it opens up the possibility that the whole of the Magadhan *karshapana* coinage may not embody any direct dynastic message.

A further restruck Series, I XXXVIII, the so-called 'Monkey' Class, also shows signs of eccentricity which may hint at a separate mint. This class was omitted from the first edition because the sole example seen by the author was so unclear that the symbols could not be drawn. The elusive 'monkey' is seldom seen in its entirety on coins; a glimpse of the tail is often all that is visible. Examples have subsequently turned up in small numbers. The style is very crude yet it overstrikes Class XVIII A which places it at the terminal end of the Series I restriking phase, perhaps implying another localised mint lacking competent workmen. Further implications of this issue are discussed below under the heading 'The six-armed symbol in Series I and the question of mint signatures'.

| New Obverse is restruck on Old Obverse | | | |
|---|---|---|---|
| 72-7 | I VIII B | 60 | I VI D1 |
| 86 | I XI A 1 | 59a | I VI C 76 |
| 86 | I XI A 1 | 60 | I VI D1 |
| 86 | I XI A 1 | 61c | I VI D 34 |
| 86 | I XI A 1 | 62a | I VI D 35 |
| 86 | I XI A 1 | 64 | I VI D 70 |
| 86 | I XI A 1 | 67 | I VIII A 29 |
| 86 | I XI A 1 | 77 | I VIII B 46 |
| 86 | I XI A 1 | 77a | I IX A 1 |
| 86 | I XI A 1 | 77g | I IX A 2 |
| 86 | I XI A 1 | 78 | I IX A 4 |
| 86 | I XI A 1 | 79 | I IX A 29 |
| 86 | I XI A 1 | 81a | I IX A 35 |
| 86 | I XI A 1 | 112h/n | I XVI C- |
| 86 | I XI A 1 | 162 | I XXIII A 4 |
| 86 | I XI A 1 | 113/5 | I XVII A - |
| 86 | I XI A 1 | 64 | I VI D 70 |
| 86b | I XI A 4 | 60 | I VI D 1 |
| 89a | I XI A 35 | 82/5 | I X A - |
| 89a | I XI A 35 | 143b | I XX A 1 |
| 89a | I XI A 35 | - | I X A - |
| 89e | I XI A 488 | - | I X A ? |
| 89e | I XI A 488 | 89f | I XI B 2 |
| 86/9 | I XI A - | 82 | I X A 1 |
| 89g | I XI B 36 | 90 | I XII A 1 |
| 90 | I XII A 1 | 35/6 | I IV C - |
| 90 | I XII A 1 | 82 | I X A 1 |
| 90 | I XII A 1 | 116b | I XVIII A 28 |
| 90/4 | I XII A - | 69 | I VIII A 35 |
| 91 | I XII A 2 | 86 | I XI A 1 |
| 93a | I XII A 29 | 60 | I VI D 1 |
| 93b | I XII A 35 | 62 | I VI D 33 |
| 94 | I XII A 72 | 82/5 | I X A - |
| 95b | I XIII A 4 | 95b | I XIII A 4 |
| 95c | I XIII A 28 | 95 - | I XIII A - |
| 95e | I XIII A 30 | 60 | I VI D 1 |
| 95f | I XIII A 36 | 99 | I XIV A 36 |
| 95f | I XIII A 36 | 82/5 | I X A - |
| 95g | I XIII A 43 | 95 - | I XIII A - |

Table 19: Restrikes in Series I. 'A -' indicates the variety is not clear

| New Obverse is restruck on Old Obverse | | | |
|---|---|---|---|
| 95h | I XIII A 49 | 95h | I XIII A 49 |
| 95k | I XIII A 71 | 95k | I XIII A 71 |
| 95n | I XIII A 167 | 95n | I XIII A new |
| 95d | I XIII A 29 | 95 - | I XIII A - |
| 95p | I XIII A 492 | 95p | I XIII A 492 |
| 95p | I XIII A 492 | 82a | I X A 2 |
| 95 - | I XIII A - | - | I VI or I IV |
| 96 | I XIV A 4 | 72/7? | I VIII B - |
| 116/8 | I XVIII A - | 88 | I XI A 29 |
| 116/8 | I XVIII A - | 113/5 | I XVII A - |
| 118 | I XVIII A 35 | 115 | I XVII A 36 |
| 264/2a | I XXXVIII A 1 | 60 | I VI D 1 |
| 264/2- | I XXXVIII A - | 88 | I XI A 29 |
| 264/2c | I XXXVIII A 30 | 88 | I XI A 29 |
| 264/2c | I XXXVIII A 30 | 77d/81 | I IX A- |
| 264/2e | I XXXVIII A 35 | 115e | I XVIII A 1 |
| 264/2-? | I XXXVIII A -? | 89j | I XI B 36 |
| 264/2a | I XXXVIII A 1 | 143/6 | I XX A- |

Table 19 Contd.: Restrikes in Series I. 'A -' indicates the variety is not clear

(4) Absence of fifth marks. The vast majority of the older obverses on the 'Donkey Rider' coins appear to be lacking a fifth mark, while the vast majority (perhaps all) of the new obverses have one (it is difficult to tell because of the combination of poor punches, bad striking, overlapping marks and bankers marks, see Fig. 36). A working hypothesis here would involve the original coins being issued with no fifth mark, so when fifth marks were introduced a decision was taken to recall all of them and restrike them this time including the fifth mark. It seems all the money in circulation in the 'Donkey- Rider' zone, whether of class XIII or other classes, was withdrawn, restruck and re-issued. In the process some coins of other classes also got restruck, implying the coins were withdrawn from circulation, rather than being restruck before they had left the mint. This indecisiveness about fifth marks harkens back to the earliest time of Series I, yet from the overstrikes class XIII is clearly later than the other four-mark classes. As we have

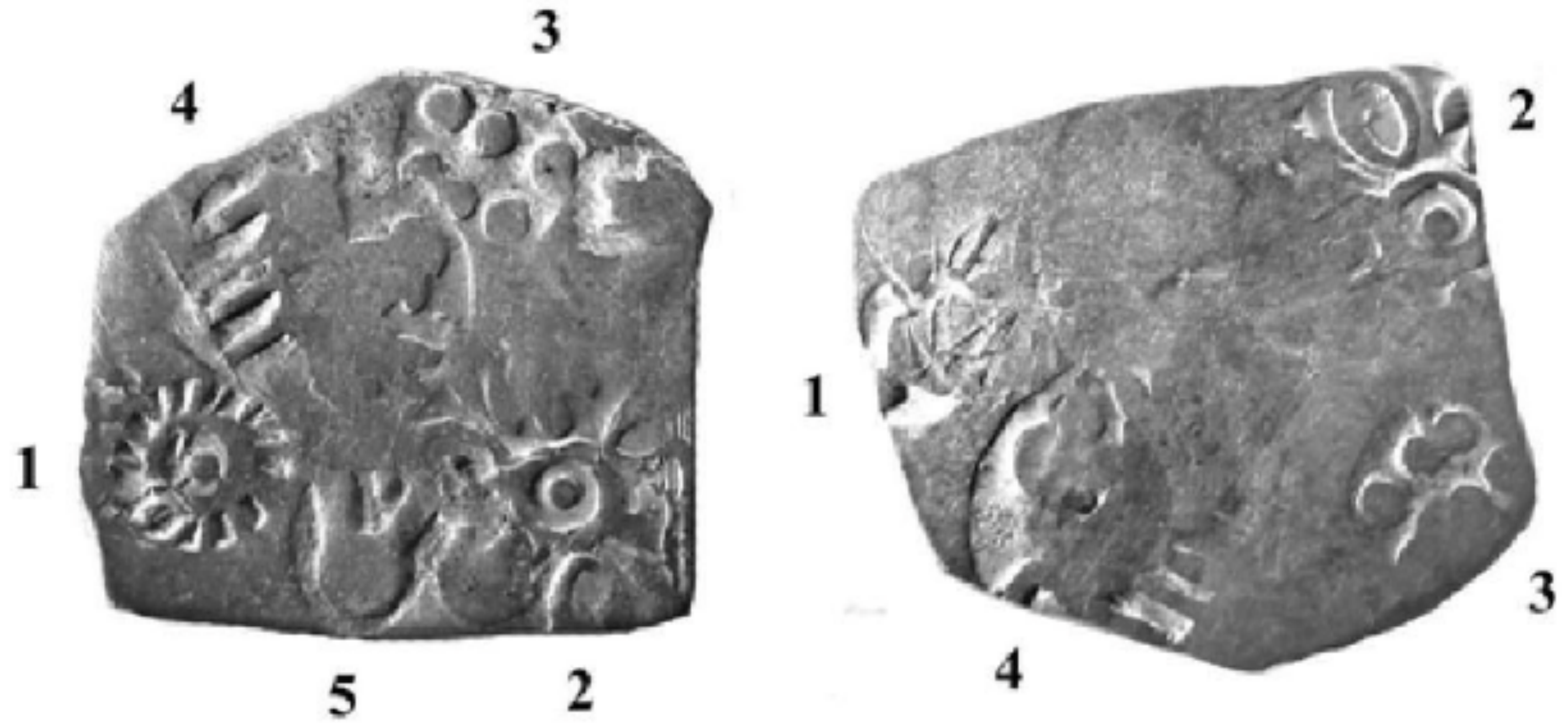


Fig. 36: Example of an unusually clear Series I XIII coin restruck on the same class where the old obverse (right) appears to be missing the fifth mark. x2.

seen above, those early four-mark classes in Series I were probably also withdrawn because of their lack of fifth mark, but in their case there is no sign of restriking. That augments the case for the Donkey-Rider coins being the product of a separate mint which was loosely organised and seems to have lagged behind the times.

(5) Hoard evidence. The coins of I XIII appeared in considerable numbers but mainly without admixture with other classes. As mentioned above, the class had not previously been common and hoard evidence shows it did not circulate amongst other issues to any extent. This suggests that both its initial issue and its recoinage were local events, and withdrawal occurred at the place of issue. We may even have a signal as to the location of this place. In three separate hoards seen in trade, the Donkey-Rider coins have been associated with those of Kosala. Could this mint perhaps have been located in a town geographically close to the state of Kosala, which was coining its own money at this time?

(6) Finally, Series I coins of Class XIV B are also known overstruck on coins of an unattributed *janapada* state (Fig. 37). This verifies the near-contemporaneity of I XIV B with the *janapada* issues.

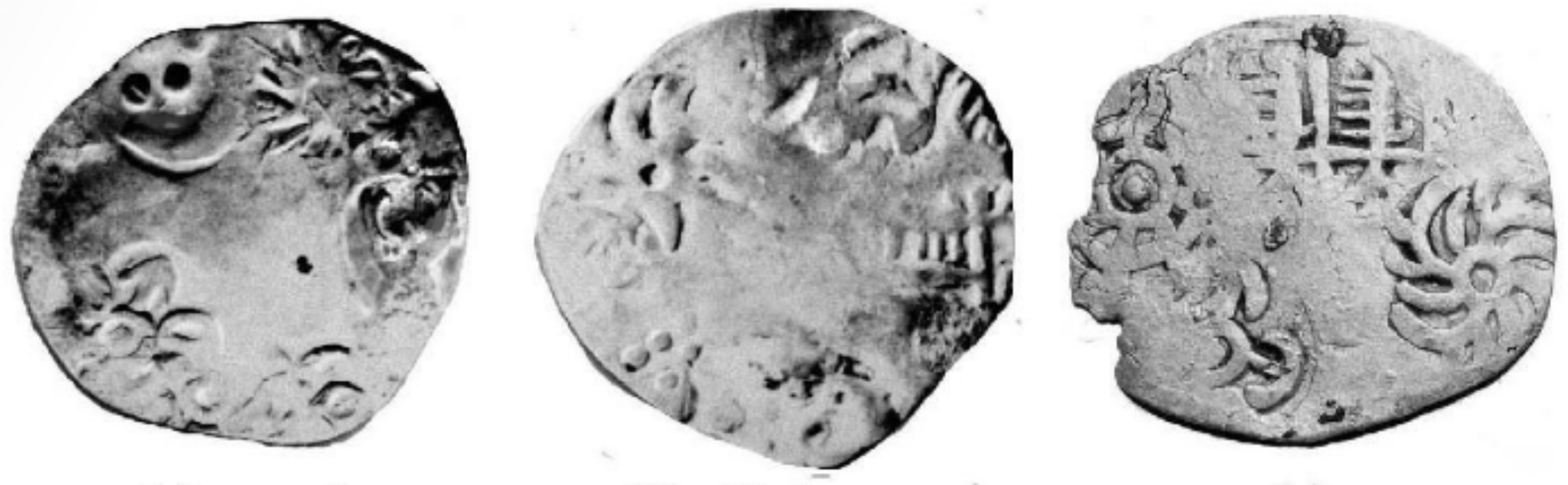

(a) new obverse (b) old obverse (c)

Fig. 37: Hybrid coin with new obverse (a) of Class I XIV B, and old obverse (b) of an unattributed four mark *janapada* coin weighing 3.06 grams. (c) shows a better example of (b) with the plough bulls as used on Series I VII.x 1.5.

## 8. Hoards

The time overlap between *janapada* coinages and early Series I is also confirmed by hoards that mix *janapada* and *karshapana* types, and by the 'Vassal State' coins (see below page 138). Sharma (2005) has described the Pratapgarh hoard of 53 coins of Series I, II and III, found together with 38 late Kosala coins. Occasionally Series I hoards turn up with *janapada* strays in them, such as the Bargama hoard (Sharma & Verma 2001-2) or the unpublished Bihar (Tye) hoard. The present author has also noticed parcels of Series I coins that come with stray *janapada* coins, although absolute proof that they are from the same hoard is wanting.

Very few hoards of Magadha *karshapanas* contain a mixture of Series I with later Series. The largest hoard of Magadhan *karshapanas* ever studied, the Amaravati hoard (Gupta 1963), which contained 7886 coins, contained only two coins of Series I. Gupta (1963, 146-147) records that Series I coins were found along with those of later Series in hoards from Rajghat, Ramna, Gorakhpur, Thathari and Vembavur, but these were only strays in worn condition. It appears some event took place between Series I and later Series resulting in the almost total disappearance of Series I from circulation. The most likely explanation is the withdrawal and remelting of Series I coins at about the time when Series II coins were first being issued. Apart from the few examples of Series I coins in later hoards, a further indication of their survival in very small numbers into later time comes from the presence of the large countermark 481 that has been noted, to the author's knowledge, on four coins of Classes I XVIII C, I XXIV, I XXIX and I XXXIII (see Fig. 9 e-g). This countermark starts to be used in Series III and terminates in Series IVa. Class I XVIII C belongs in Phase 4, and the others in Phase 5 of the Series I chronological table (Table 22), thus augmenting the case for these classes being late in Series I. The survival of freak 'ancient' coins in currency is probably ubiquitous throughout history. Kosambi (1965, plate 62) cites the extreme example of a Menander drachm found passing as a half rupee in a Pune bazaar in 1940.

In the current work, ten hoards of Series I coins were studied: Aurihar, Bargama, Bihar (Tye) Hoard, Dalmau, Golakhpur, Jaunpur, the Kulkarni hoard, Sasaram, Uziaraghat, and the unprovenanced '1999 Hoard'. A summary of these hoards, arranged in likely chronological sequence, is shown in Table 20.

For a more detailed breakdown of the hoards and other evidence used to determine the chronology in Series I see Appendix 8.

### Golakhpur and Aurihar hoards

Of the ten hoards, only Golakhpur and Aurihar have been used in the numerical evaluation. They provide key evidence for the early issues of Series I. The Golakhpur hoard is one of the few that supplies firm evidence of the coins in circulation at the initial stage of Series I, with a complete absence of classes later than I VI, while the Aurihar hoard represents a typical spread of types in circulation at the end of the Series, with an absence of most classes present in the Golakhpur hoard. The two hoards are almost mutually exclusive. The presence of a single coin in the Golakhpur hoard belonging to Series I VI C (Type 57) as registered by Prasad (1934) creates an anomaly. In the present chronological proposal, I VI C belongs in Phase 4 whereas all the other Golakhpur coins are in Phase I. However it is by no means clear that this coin is actually a part of Class I VI C. A close look at the photo does indeed show half of symbol 95, a squared square with an oval dot in each quarter, that characterises I VI, but the expected wheel in a box for the fourth mark as drawn by Prasad, featured in I VI C, seems to have no wheel and no box. Most likely this type belongs not to I VI C but another phase of I VI dating to early Phase 2.

It seems that Class I VI may have been a long-term issue, or more than one issue not contiguous in time, produced during Phases 2 to 4. That would explain both its relatively common occurrence as well as its appearance in both early and later hoards in Series I.

Just as the coins of Series I are absent from almost all hoards of Series II onward, so the early coins ('Phase 1') of Series I are themselves largely absent from most hoards containing later Series I classes. This seems to represent another 'break point' when the early *karshapana* classes of Series I ceased to circulate, at least amongst the marketplaces which used later classes. This could represent a geographic separation, but it is more likely to have been caused by a withdrawal of early coinage. Many classes in Phase 1 havethe fifth mark either absent or tentatively introduced; it is tempting to explain the withdrawal as having had somethingto do with this – perhaps a decision that four-mark coins were no longer acceptable in circulation. Withdrawal might also explain why such coins are so scarce today. We have already seen how a similar situation may have occurred with Series I XIII.

In summary, the factors suggestingthat chronological separation explainsthe contrast between the Golakhpur and Aurihar hoards are as follows:

1. Style – Golakhpur coins have crude design and poor execution, a property that sometimes, but not always, suggests an earlier date.
2. Golakhpur coins lack fifth marks on many types, suggesting they were issued prior to the introduction of the fifth mark as a standard part of the coinage.
3. Sun, six armed symbols and some other marks on Golakhpur coins have affinities with those in Series 0, bonding them to the earliest period in Series I.
4. There is an absence of 'long-life' fifth marks on Golakhpur coins which seem to be introduced later in Series I.

| CLASS | Golakhpur | Bihar | Sasaram | Kulkarni | Aurihar | Bargama | Dalmau | ‘1999’ | Jaunpur | Uziaraghat | PHASE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I I A & D* | x | | | | | | | | | | PHASE 1 |
| I I B & C* | x | x | | | | | | | | | |
| I III | x | x | | | | | | | | | |
| I IV A* | x | x | x | | | | | | | | |
| I IV B | x | x | | x | | | | | | | |
| I IV C | x | | | | | | | | | | |
| I IV D* | | x | | | | | | | | | |
| I V* | x | | | | | | | | | | |
| I VI B* | | x | | | x | x | | | | | PHASE 2 |
| I VI E & F* | | | | | | | | | | | |
| I VI G & H* | | | | | | | | | | | |
| I VII* | | x | | | | | x | | | | |
| I XVIII D* | | | | | | | | | | | |
| I XXXVII | | x | x | | | | | | | | |
| I XL * | | | | | | | | | | | |
| I XVII | | | | | | x | | | | | |
| I XXXIX | | x | | | | | | | | | |
| I XLI* | | | | | | | | | | | |
| I XVI A & B | | x | x | | | | | | | | |
| I XVI C | | | | | | | | | | | |
| I VI A | | | x | x | x | x | x | | x | | PHASE 3 |
| I VI D | | | x | | x | | x | | | | |
| I XIV A | | | x | | x | | | | | | |
| I XIV B | | | | | | | x | | | x | |
| I XLII A* | | | | | | | | | | | |
| I XX A | | | x | | x | | x | | | | |
| I XX B* | | | | | x | | x | | | | |
| I VIII A | | | | x | | | x | | | | PHASE 4 |
| I VIII B | | x | | | | x | | | | | |
| I IX | | | | | | | | | x | | |
| I X | | | x | | x | | | | | | |
| I VI C | x | | x | x | x | x | x | x | | | |
| I XI B | | | | | | | | | | | |
| I XI A | | | x | | x | | x | | x | | |
| I XIII | | | | | | | x | | | x | |
| I XVIII A | | | | x | | | x | | | x | |
| I XII A | | | | | x | x | | | | | |
| I XVIII C | | | | x | x | x | x | x | x | x | |
| I XXII* | | | | x | x | | x | x | | | |
| I XXVII | | | | x | x | x | x | x | | x | |
| I XLII B* | | | | | | | | | | | |
| I XXXVIII | | x | | | | | x | x | | | |

Table 20: Summary of Series I hoards. The five Phases
are explained in detail in Appendix 8.
* indicates small issue, absence not significant.

| CLASS | Golakhpur | Bihar | Sasaram | Kulkarni | Aurihar | Bargama | Dalmau | ‘1999’ | Jaunpur | Uziaraghat | PHASE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I XV | | | | x | x | x | x | x | x | | PHASE 5 |
| I XVIII B | | | x | x | x | x | x | x | | x | |
| I XIX | | | | x | x | x | x | x | x | | |
| I XXI | | | | x | x | x | x | x | x | | |
| I XXIII | | x | | x | x | x | x | x | x | | |
| I XXIV | | | | x | x | | x | x | | x | |
| I XXV | | | | x | x | | x | x | x | x | |
| I XXVI | | | | | x | | x | x | | x | |
| I XXVIII | | | | | x | | x | x | | | |
| I XXIX | | | | x | x | x | x | x | | x | |
| I XXX A | | | | x | x | | x | | x | x | |
| I XXXI | | | | x | x | x | x | x | | | |
| I XXXII | | | | x | x | | x | x | x | x | |
| I XXXIII | | | | x | x | x | x | x | | x | |
| I XXXIV | | | | x | x | | x | x | | x | |
| I XXXV A | | | | x | x | | x | | | | |
| I XXXV B* | | | | | x | | x | | | | |
| I XXXVI | | | | x | x | | x | x | | | |

Table 20 Contd.: Summary of Series I hoards. The five Phases
are explained in detail in Appendix 8.
* indicates small issue, absence not significant.

### *The '1999 hoard'*

A hoard of unknown provenance appeared in 1999 (called here the '1999 Hoard') which contained 143 coins, 131 of Series I, ten of Series II not restruck, and apparently two coins of Series III overstruck on Series II. There is good reason to believe the latter two are not a part of the hoard – they are not in fresh condition, whereas the ten unstruck coins of Series II are fresh, albeit rather poorly struck, and many of the other coins are fresh (Table 21). This suggests they had not been long in circulation. This hoard provides valuable information about the transitional period between Series I and II. The presence of fresh Series II coins not restruck (rarely seen) is a strong indication that the hoard was deposited shortly after the introduction of Series II, but before the beginning of Series III.

The hoard offers some interesting evidence. It is dominated by Classes I XXVII and I XXIX (57 coins), which might suggest these are the most recent issues, but the number of bankers marks is not markedly less than on other classes, and the condition not markedly better (they contain six coins in only 'fine' condition). That would imply a geographical proximity to the mint of issue rather than a chronological position, assuming that coin from the mint was distributed locally rather than transported long distances.

The classes contained in this hoard are most likely linked in both time and geographic proximity; they show the 'mature' design which comes in Phase 4 of Series I. Absent are most of the classes which engage in restriking, save for I XVIII A and I VI C. The presence of I XVIIIA, which is a chronological marker, shows the hoard was accumulated after the start of sequential Group 3 within Phase 4 (Table 22).

Interestingly Class I VI C is present in this hoard, and in mostly unworn condition. That supports the conclusion above that the issue of I VI is spread over a long period.

Also of interest in this hoard is the recurrence, on 41 coins, of a bankers mark comprising seven dots round a central pellet (Fig. 38). But none of the ten coins of Series II has this mark. While the bankers marks on the Series I coins appear predominantly on the obverse and in small numbers, the bankers marks on the Series II coins are

| Series I Class | Phase | No of coins | Condition Mint | +EF- | +VF- | +F- | Average no bankers mks Obv | Rev |
|---|---|---|---|---|---|---|---|---|
| I VI C | 3 | 15 | 1 | 9 | 5 | 0 | 7.0 | 0.8 |
| I XV | 5 | 1 | 0 | 0 | 1 | 0 | 2.0 | 0 |
| I XVIII | 4 | 12 | 0 | 8 | 3 | 1 | 3.4 | 0.4 |
| I XIX | 5 | 2 | 0 | 2 | 0 | 0 | 1.0 | 0 |
| I XXI | 5 | 5 | 0 | 5 | 0 | 0 | 1.3 | 0.6 |
| I XXII | 4 | 6 | 2 | 2 | 2 | 0 | 1.1 | 0 |
| I XXIII | 5 | 5 | 0 | 2 | 3 | 0 | 2.0 | 0.6 |
| I XXIV | 5 | 1 | 1 | 0 | 0 | 0 | 1.0 | 0 |
| I XXV | 5 | 2 | 1 | 0 | 1 | 0 | 3.5 | 0 |
| I XXVI | 5 | 1 | 0 | 0 | 1 | 0 | 4 | 0 |
| I XXVII | 4 | 37 | 1 | 18 | 15 | 3 | 2.1 | 0.2 |
| I XXVIII A | 5 | 3 | 0 | 0 | 0 | 3 | 3.0 | 1.4 |
| I XXIX | 5 | 20 | 0 | 9 | 9 | 2 | 1.9 | 0.3 |
| I XXXI | 5 | 5 | 0 | 2 | 3 | 0 | 2.5 | 1.0 |
| I XXXII | 5 | 2 | 0 | 0 | 1 | 1 | 2.5 | 1.0 |
| I XXXIII | 5 | 5 | 0 | 0 | 4 | 2 | 2.5 | 1.2 |
| I XXXIV | 5 | 5 | 0 | 2 | 3 | 0 | 1.4 | 0.2 |
| I XXXVI | 5 | 2 | 0 | 1 | 1 | 0 | 4.0 | 0 |
| **Series II** |  | 10 | 0 | 2 | 7 | 1 | 2.7 | 2.5 |

Table 21: The '1999' Hoard: content, condition and bankers marks

equally spread between obverse and reverse. All of this suggests the owner of this hoard had recently received the coins of Series II from a different district.

Finally, the classes from Phase 4 which are *not* present in this hoard, namely I XVIIIB, I XXVI, I XXX and I XXXV, may provide chronological information. None of these classes is particularly rare (see Table 15). Their absence suggests some or all of them had not yet been issued, verifying that Series II was underway before Series I had been completed.

## ***Other hoards*** (see Table 20)

The unpublished 'Bihar (Tye) Hoard' contained 51 coins including a coin of Series 0 together with 29 coins belonging to Phases 1 and 2, but from Phase 3 it contained only coins of I VIII B (17 coins), and I XXXVIII (1 coin). Curiously, it also contained three coins from Phase 4, Class I XXIII (see Appendix 8). It is tempting to regard this as a contamination from a different source, otherwise I XXIII might represent the very beginning of Phase 4.

The Sasaram hoard (Tandon 2007) represents an intermediate point in Series I. The core of the hoard according to Tandon comprises 33 coins spread through all five phases including nine restruck coins. Although the small size of the hoard means little can be read into missing classes, absence of all but one of the Phase 5 classes suggests this hoard was laid down at a very early stage in Phase 5.

The Dalmau Hoard (Sharma 2007) of 286 coins appears to have been deposited late in Series I, with only two coins from Phases 1 and 2, but with most later classes represented. The Uziaraghat hoard (Sharma 2003-4) is a smaller hoard of similar date. A large lot of 327 coins kindly supplied as photos by P Kulkarni in 2008, although not described as a discrete hoard, is shown in all likelihood to be such when its content is laid out (Table 20). It has a strong bias towards Phases 3 and 4.

The Bargama hoard (Sharma &Verma 2001-2) was originally unearthed over a century ago; Sharma and Verma examined 186 coins of which 68 belonged to Series I and the remainder to an unidentified *janapada*. The latter comprised *karshapanas* of two classes, one using four marks of 1-2-3-3 arrangement and the other 1-2-3-4 arrangement. Amongst the Series I coins, the spread is fairly even from Phases 2 to 5; the hoard implies once again that these phases were contemporary with *janapada* coinages. The Pratabgarh hoard (Sharma 2005), important in placing the transitional Series I/II in context, is discussed under that heading. The Gola Bazar Hoard (unpublished, Sharad *pers comm.*) contained 149 Series I coins including classes VI, VIII, XI, XII, XIV, XV, XVI, XIX, XXI, XXV, and XXVII. Its detailed content and disposition is not recorded. The findspot is shown on Maps 3 and 5.

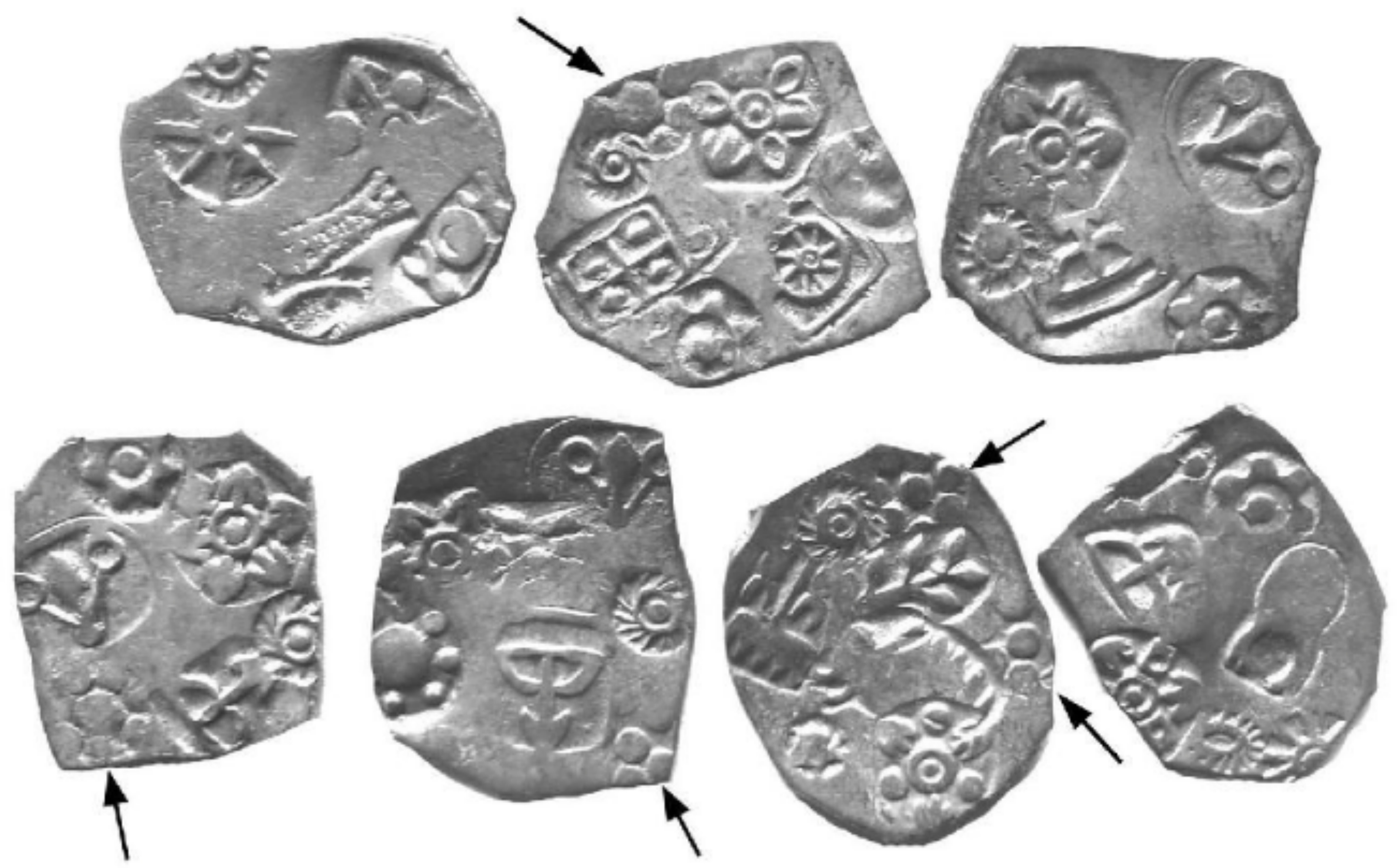


Fig. 38: Examples from the '1999 hoard' showing the recurrent bankers mark (arrowed) on four of the coins. x1.3.

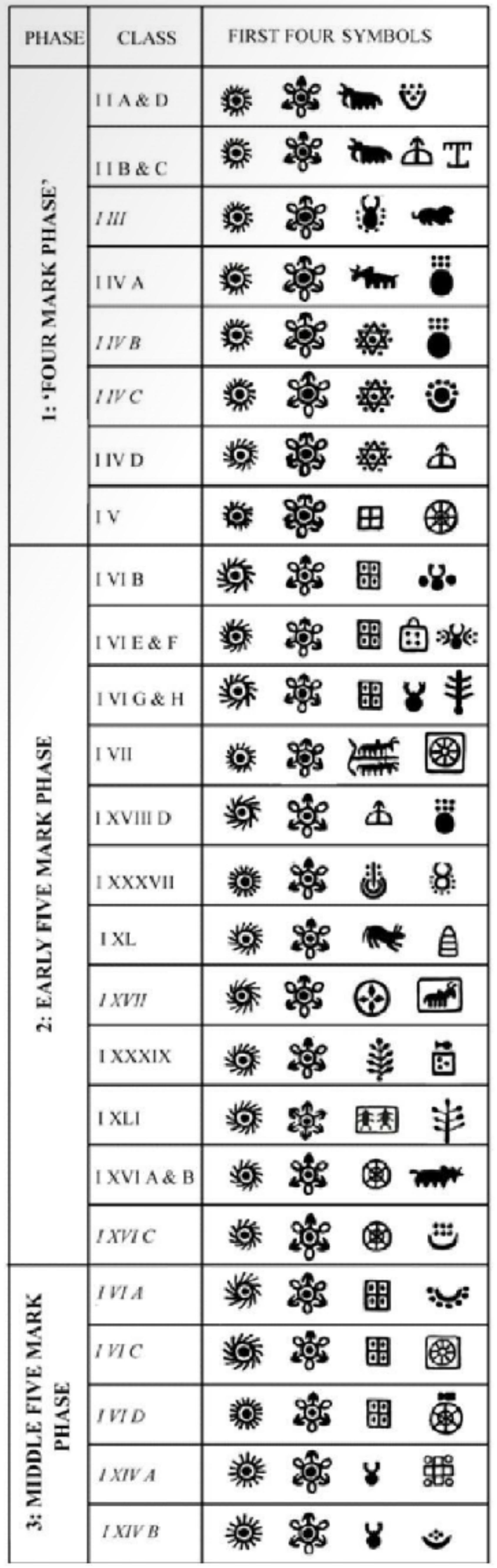
The Jaunpur hoard is recorded from information supplied by Dr. Gupta and records only the types present, not the numbers.

## Chronology of Series I: multivariate analysis

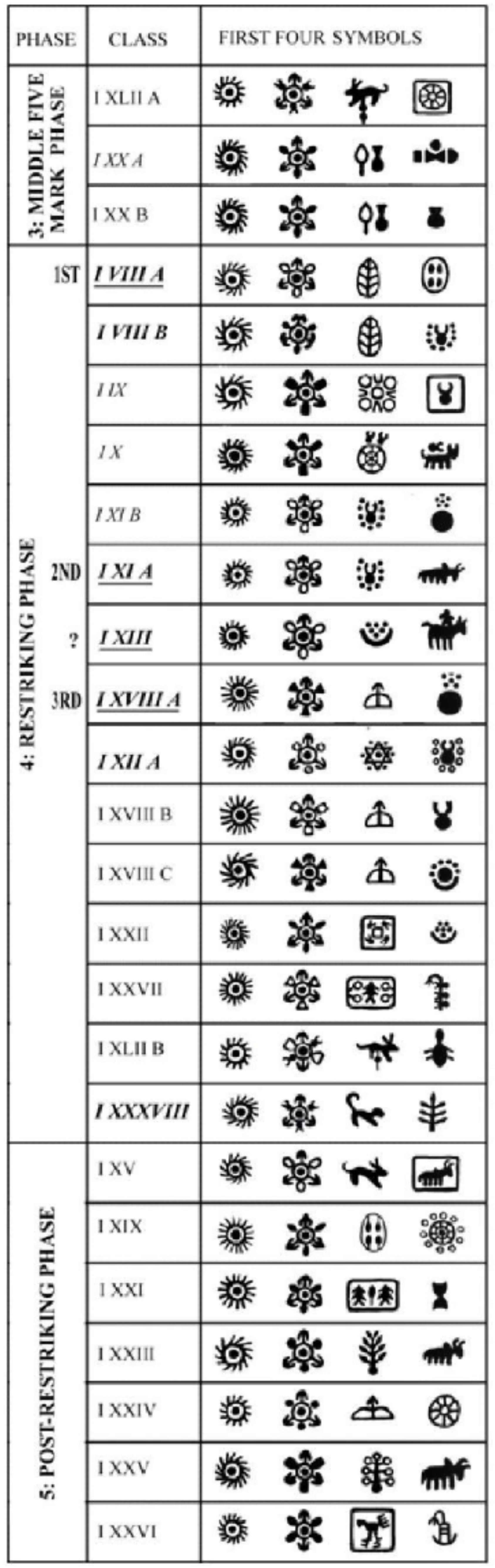
The purpose of assessing some of the factors relevant to chronology by numerical tests is to put meat on the bones of the chronology established from hoards and restrikes. Once we know that, for example, the six-armed symbol generally takes on a specific form in the earliest phase of Series I, then applying this 'rule' to all classes of Series I will help assess their place in the chronology as well.

The system of point scoring gives weight to each factor according to its perceived importance. This is in part a rather subjective process, but underlying it are objective facts, such as the absence of official fifth marks, the form in which certain symbols are rendered, or the presence or absence of particular fifth marks on different classes. The scoring system weaves together these factors into a single numerical index, the basis of which is the higher the score the later the coin.

Strong weighting is given to the absence of a clear fifth symbol on some or all types in any class, because this is considered a safe indication of early date. Such coins are also bonded by their absence in many hoards, distinctive style, poor workmanship and execution, and scarcity: other coins with these characteristics may thus also be early, although as has been mentioned the 'Monkey' class seems to break this rule. Less reliable, and difficult to determine, is the time scale over which fifth marks are introduced as Series I progresses, especially those which have 'long lives'. But amongst the limited information revealed here is some important data to help with the chronology.

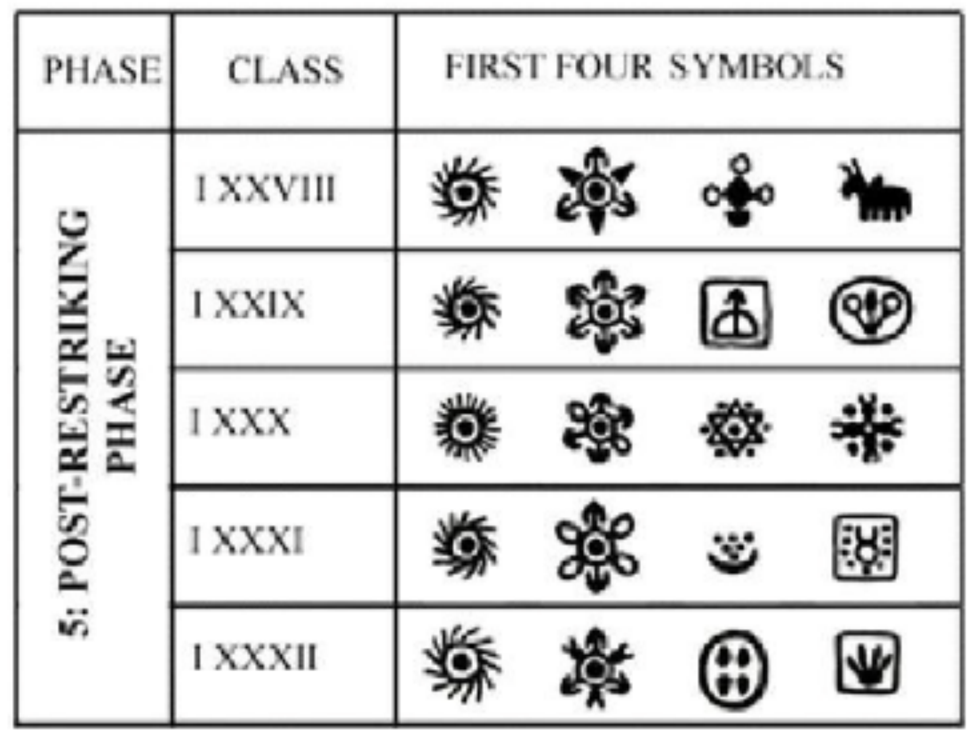


| PHASE | CLASS | FIRST FOUR SYMBOLS |
|---|---|---|
| 1: 'FOUR MARK PHASE' | I I A & D | |
| | I I B & C | |
| | *I III* | |
| | I IV A | |
| | *I IV B* | |
| | *I IV C* | |
| | I IV D | |
| | I V | |
| 2: EARLY FIVE MARK PHASE | I VI B | |
| | I VI E & F | |
| | I VI G & H | |
| | I VII | |
| | I XVIII D | |
| | I XXXVII | |
| | I XL | |
| | *I XVII* | |
| | I XXXIX | |
| | I XLI | |
| | I XVI A & B | |
| | *I XVI C* | |
| 3: MIDDLE FIVE MARK PHASE | *I VI A* | |
| | *I VI C* | |
| | *I VI D* | |
| | *I XIV A* | |
| | *I XIV B* | |

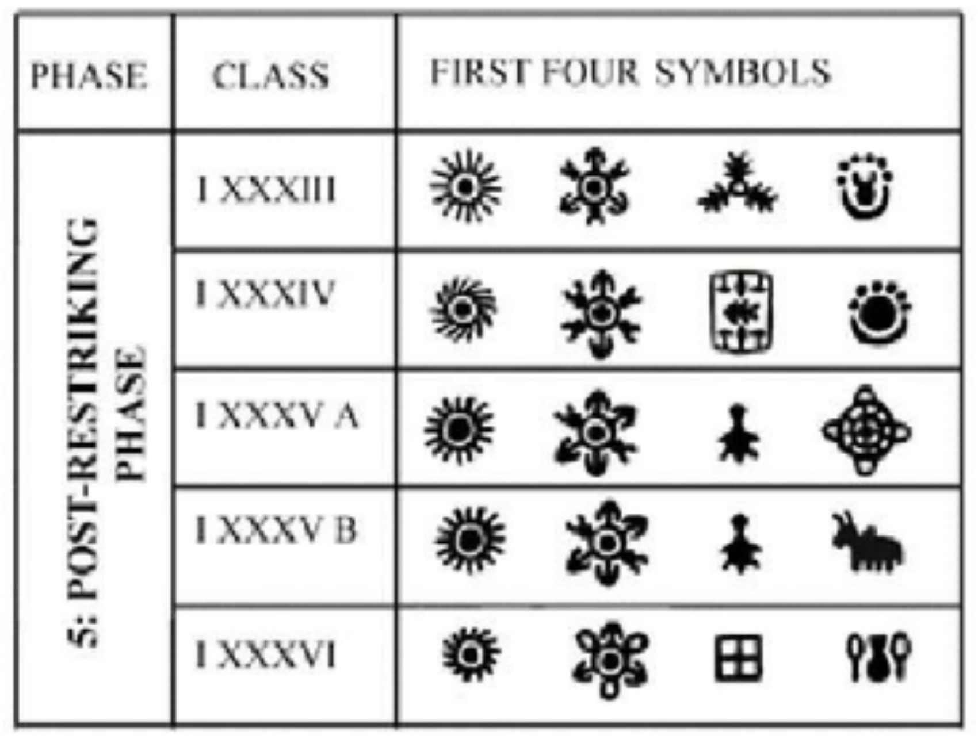


| PHASE | | CLASS | FIRST FOUR SYMBOLS |
|---|---|---|---|
| 3: MIDDLE FIVE MARK PHASE | | I XLII A | |
| | | *I XX A* | |
| | | I XX B | |
| 4: RESTRIKING PHASE | 1ST | ***I VIII A*** | |
| | | ***I VIII B*** | |
| | | *I IX* | |
| | | *I X* | |
| | | *I XI B* | |
| | 2ND | ***I XI A*** | |
| | ? | ***I XIII*** | |
| | 3RD | ***I XVIII A*** | |
| | | ***I XII A*** | |
| | | I XVIII B | |
| | | I XVIII C | |
| | | I XXII | |
| | | I XXVII | |
| | | I XLII B | |
| | | ***I XXXVIII*** | |
| 5: POST-RESTRIKING PHASE | | I XV | |
| | | I XIX | |
| | | I XXI | |
| | | I XXIII | |
| | | I XXIV | |
| | | I XXV | |
| | | I XXVI | |

Table 22: The chronology of Series I – summary. Items in ***Bold italic underlined*** are found as both old and new obverses. ***Bold italic*** signifies classes restriking on old obverses only and *italic* signifies classes only overstruck by new obverses.



| PHASE | CLASS | FIRST FOUR SYMBOLS |
|---|---|---|
| 5: POST-RESTRIKING PHASE | I XXVIII | |
| | I XXIX | |
| | I XXX | |
| | I XXXI | |
| | I XXXII | |



| PHASE | CLASS | FIRST FOUR SYMBOLS |
|---|---|---|
| 5: POST-RESTRIKING PHASE | I XXXIII | |
| | I XXXIV | |
| | I XXXV A | |
| | I XXXV B | |
| | I XXXVI | |

Table 22 Contd.: The chronology of Series I – summary. Items in ***Bold italic underlined*** are found as both old and new obverses. ***Bold italic*** signifies classes restriking on old obverses only and *italic* signifies classes only overstruck by new obverses.

There are eight long-life fifth marks eligible for these tests. Because each mark registers a numerical score, their cumulative impact would be eight times as influential as, say, assessing the style of the sun or the elephant, for which only a single numerical value can be given. So by reducing the values given to the long-life data, the scoring system does not allocate overdue weight to them relative to the data from the other factors.

Attention has also to be paid to the great variation in the frequency of different types and classes within Series I. Clearly a class with only one or two types cannot possibly have all eight of the selected fifth marks. These classes will show low total scores not because they are necessarily earlier, but because there are so few of them to assess. Yet amongst these very same classes, are the ones we believe to be the earliest anyway, for the variety of other quite robust reasons mentioned above.

Further difficulties stem from the lack of clarity of the punchmarks on the coins which sometimes prevents definite assignment to a numerical category.

Clearly with all these caveats, no attempt to refine the chronology using our numerical analysis will produce absolute precision. The acid test is whether the results suggest a chronology which fits with the predetermined evidence from hoards and restriking already assembled separately. Readers can judge for themselves by reference to Appendix 8.

Table 22 is a summary of the chronology compiled from all the criteria assembled in Appendix 8.

Despite the advance in our knowledge of the chronology within Series I, in the main Catalogue the classes have been left for the most part in the order they were in the first edition. Thus readers familiar with the original sequence will find it preserved. An exception is Class I XXX B which is clearly a part of I IV and is therefore transferred.

## The six-armed symbol in Series I and the question of mint signatures

The original six-armed symbol, alternating arrows and ovals, as used in Series 0, would most likely have been in use while Magadha's original capital city was at Rajgir. This symbol is the only one used in Phases I and II of Series I, but part way through Phase III new ones are introduced.

The *puranas* tell of the move of the Magadhan capital from Rajgir to Pataliputra (modern Patna) under the Sisunaga king Udayin about the end of the fifth century BC. It might be prudent to look for changes in the coinage at this time, consequent on a change of mint. Such changes might then endure for an extended period. One group of six-armed symbols seems to fit this pattern: those containing taurines. They include the alternating arrows and taurines (symbol 392), first seen in Series I Phase 5, and also used in Series IV, V and VI. Other arrangements of taurines and arrows in Series I occur on I XXXII A, I XXXIII A, I XXXIV A, I XXXV A & B. All belong in Phase 5, the latest phase of Series I.

Mitchiner, using his own methods, came to the conclusion that the six-armed symbol embodies a mint signature (Mitchiner 2004, 831). It might be tempting to think of the group of six-armed symbols that contain taurines, either just as alternating with arrows, or with other arrangements as well, as coinciding with the newly-opened mint at Pataliputra. If correct this would help to date the opening of the mint there as coinciding with the late issues of Series I.

There is however a problem with this interpretation. The eccentric 'Monkey' class also uses alternating arrows and taurines as its six-armed symbol. As discussed above, this issue shows all the signs of belonging to a separate, rather backward mint, not the kind of coinage one might expect to see as the first issue from the new capital city.

Mitchiner (2004) also suggested Varanasi as a third mint in addition to Rajgir and Pataliputra; if so the six-armed symbols show no evidence for it and there is no hoard evidence to support it.

It must be concluded that the 20 varieties of six-armed symbol in Series I do not lend themselves to clear separation on a mint-by-mint basis, whereas they do lend themselves to a chronological evolution. (The only other discernible change in the Series I sequence that might be associated with a mint reorganisation at this time relates to the change from three/four mark coins to five marks in Phase 1, but that seems to be a gradual evolution very early in the sequence.)

After Series I, the complexity of six-armed symbols, at a time when the rapid territorial expansion of Magadha would perhaps have provoked the opening of more mints, makes any attempt at the attribution of other six-armed symbols to mints an impenetrable task at present.

## Third marks in Series I

The rule that marks once introduced always retain the same position or 'function' in the sequence of five is broken more frequently in Series I than in other Series (see Table 8), and it is significant that this occurs more often early in the Series.

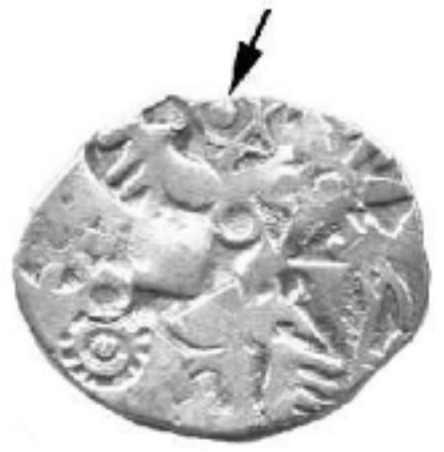


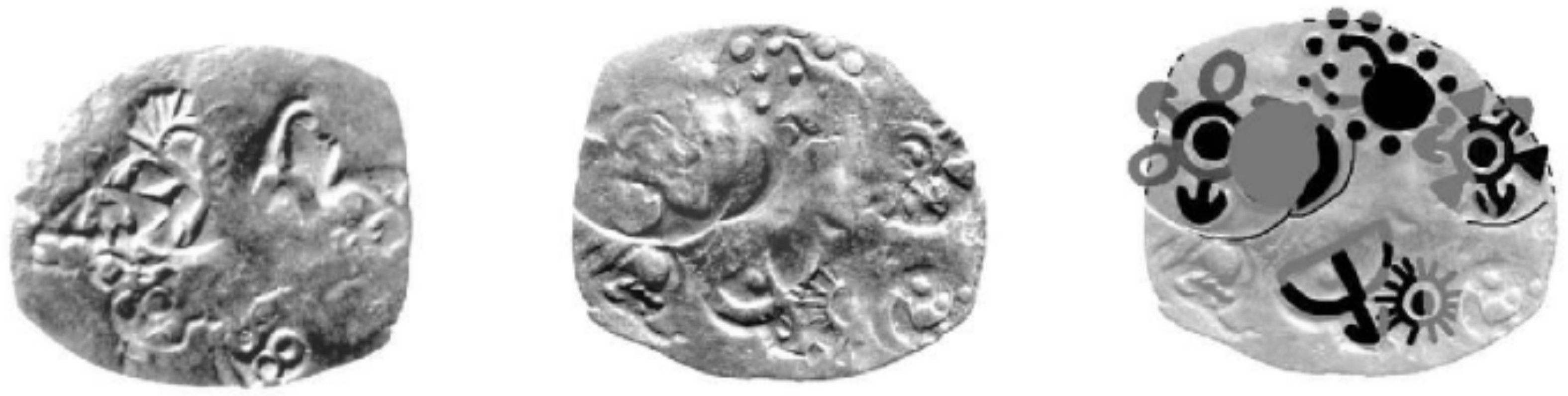
Fig. 39: An example of Series I XXVIII showing the six-pointed star mark (arrowed)

Also in this Series, not all groups with common third marks are contemporary. For example coins bearing the six-pointed star as third mark are issued early in the sequence (in Class I IV) but also recur in the later Classes I XII and I XXX. Fig. 39 shows a coin of Class I XXVIII which has the same star as an extra mark, perhaps linking this class as well to I XXX. And as has been noted, coins of the very long Class I VI are clearly issued during both Phase 2 and Phase 3.

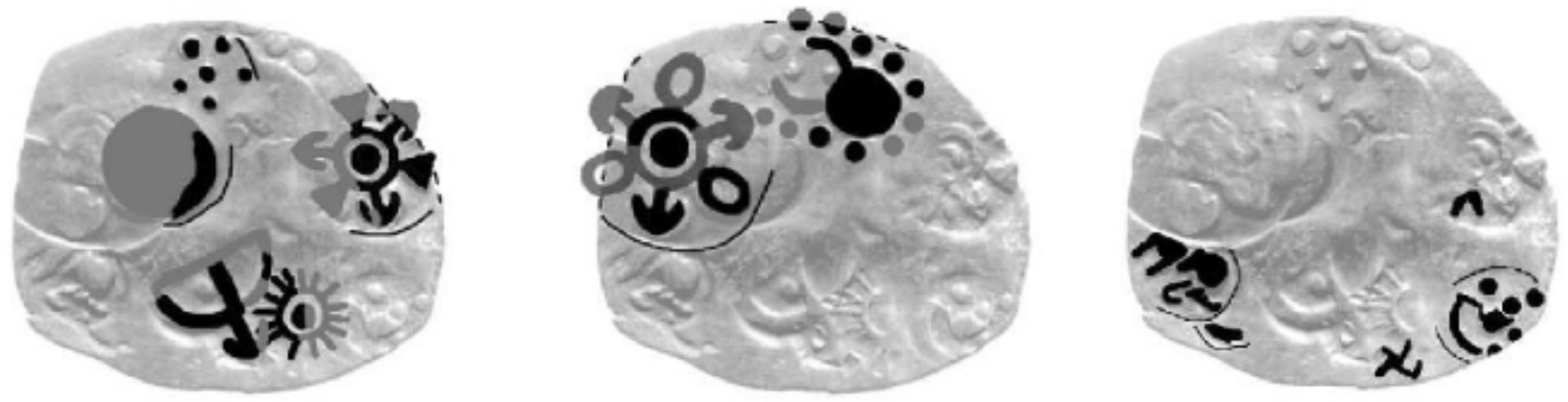
These observations reflect the fact that in Series I the mint was feeling its way towards the systems that gelled later in the *karshapana* coinage.

## Evidence from coins with more than one type on the same side

In the British Museum there is a coin of I XXXVIII the 'Monkey' class, with three types (triple obverse, Fig. 40). On the new obverse (i.e. the Monkey type) the fifth mark (mark 49) is tentative and the fourth mark (twig mark 77) seems to be missing, hence it is not included in the Catalogue, but it has been restruck on the reverse of a coin which had previously also been struck on the same side with two different types: I XI B and I XVIII A. Both old obverse classes share the same fourth mark, a large solid circle with a ring of dots above. Yet this mark appears to be punched only once. There are in addition three symbols visible from I XI and four from I XVIII (the sun with straight rays is characteristic of I XVIII A not I XI B), along with other fragmentary marks which may include the fifth marks.



New Obv I XXXVIII A 49? Old Obv Old Obv marks overlaid



Old Obv: common 4th mark and other marks from I XVIII Old Obv marks from I XI Fragmentary marks

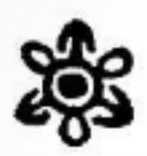
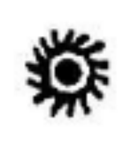
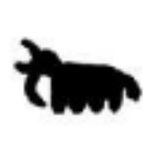
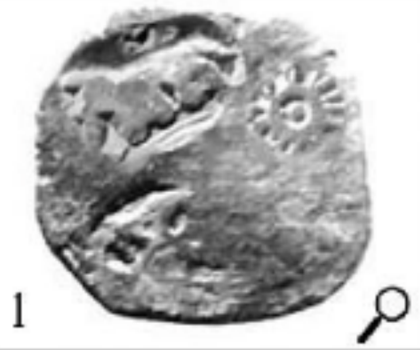
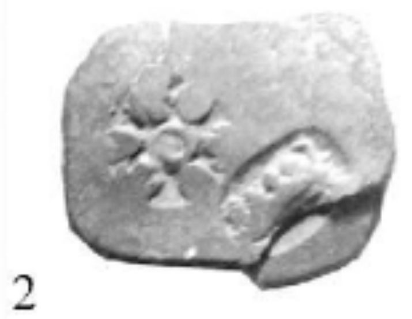
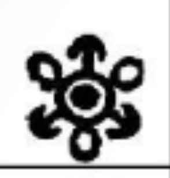
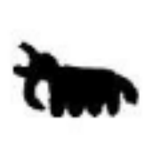
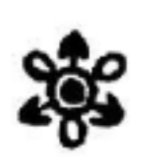
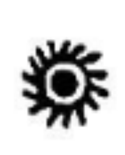
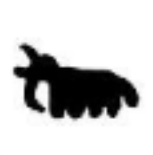
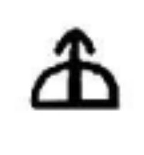
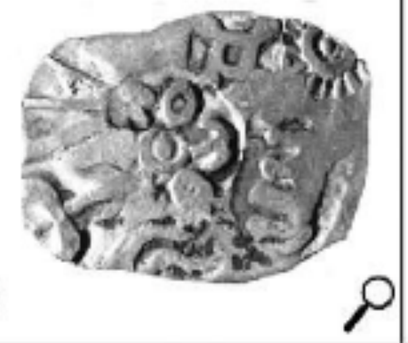
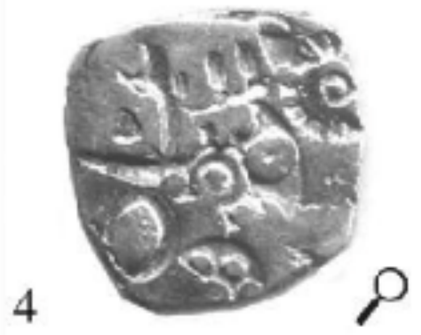
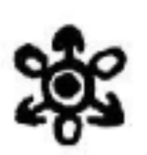
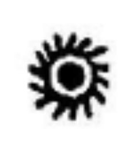
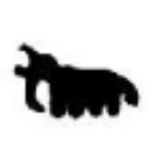
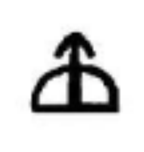
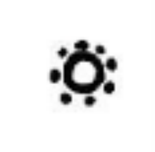
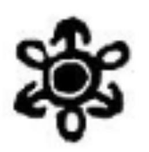
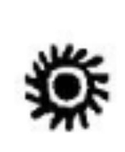
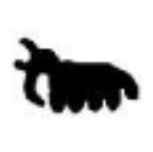
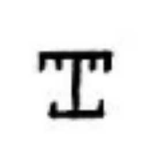
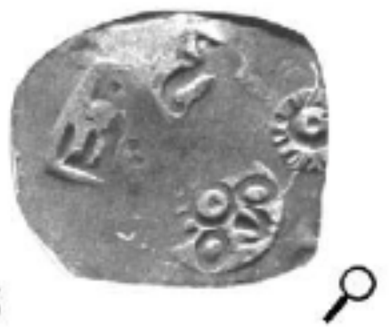
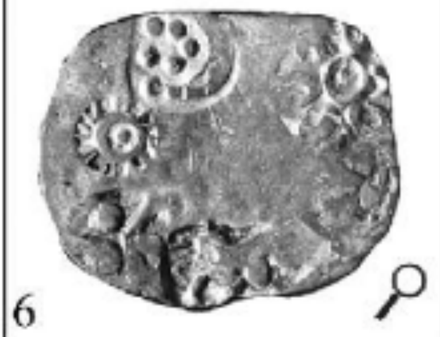
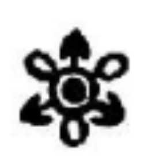
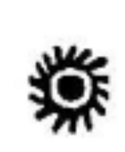
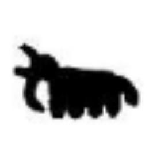
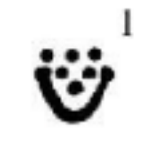
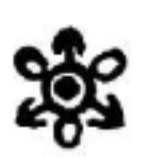
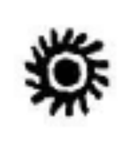
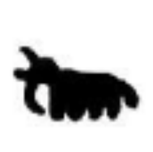
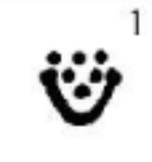
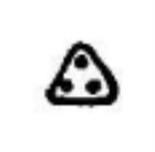
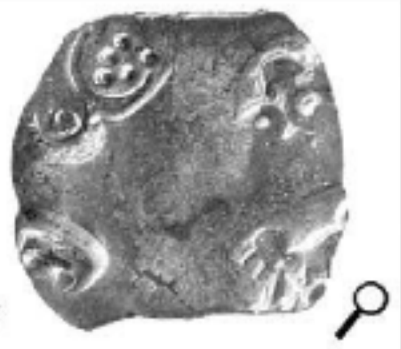
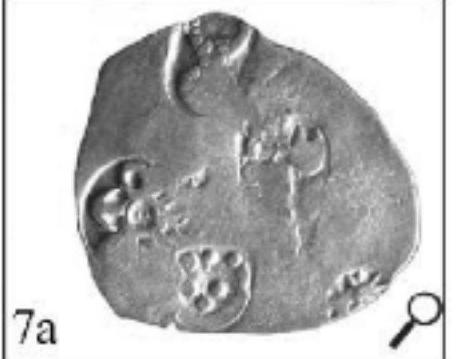
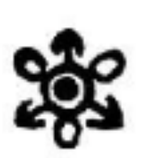
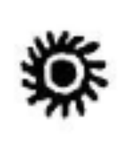
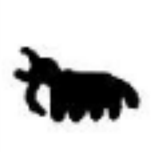
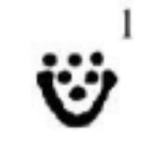
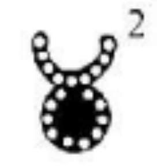
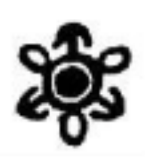
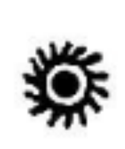
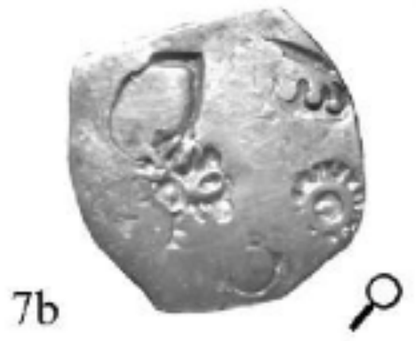
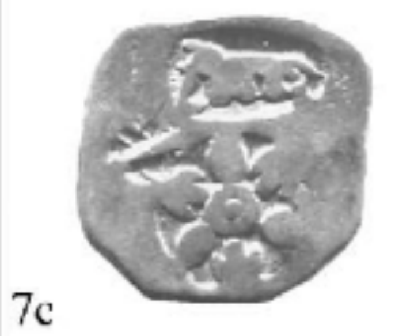
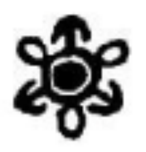
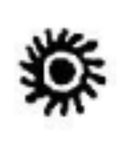
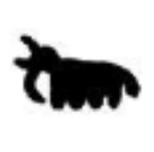
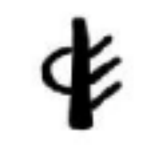
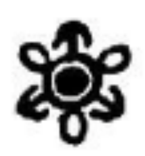
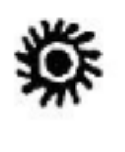
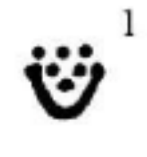
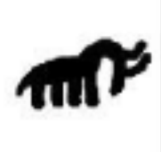
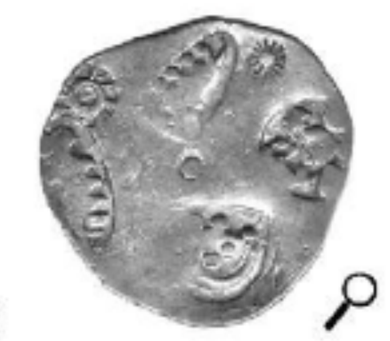
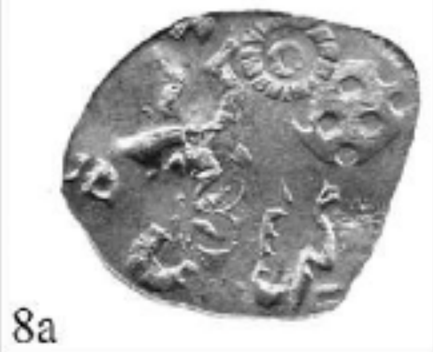
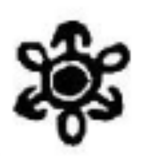
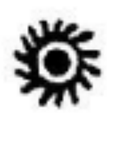
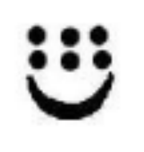
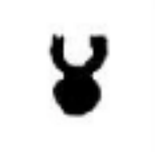
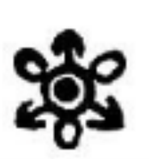
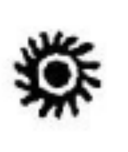
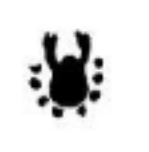
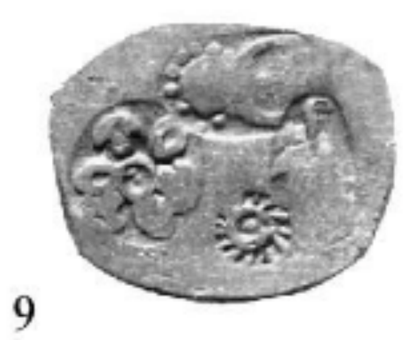
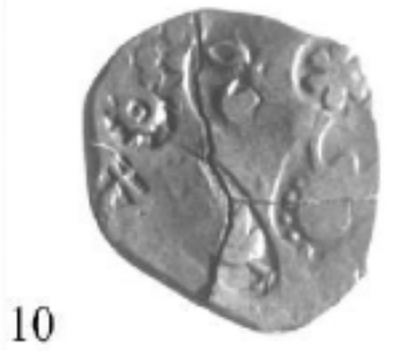
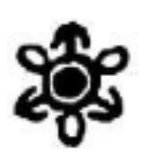
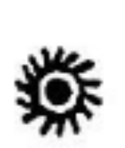
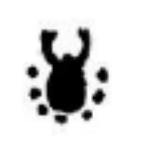
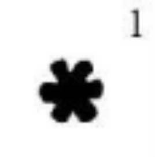
Fig. 40: Triple obverse coin © British Museum.S/S.

The chronological implications for the old obverse of this coin are (1) the mint workman may have been striking I XI and I XVIII simultaneously and got the punches confused, (2) following from this these two classes would of course be contemporaneous and from the same mint workshop, a suggestion supported by their sharing of the same fourth mark, and (3) both would predate I XXXVIII, the 'Monkey' class, which comprises the new obverse.

## Duration of Series I

Despite an increasing amount of data, there is little firm evidence for the duration of Series I. As discussed in the section on Absolute Dating, attempts to gauge this by averaging the number of classes, or the number of types, that might have been issued each year, are no longer very convincing, because of the sheer number of classes and types in the Series in comparison to later issues. If, for example, we were to assume a constant rate of issue of between one and three types per year, which fits quite well into the likely timespan for Series II to VII, we would deduce that Series I lasted for between 168 and 500 years, but this is clearly contradicted by all the other evidence. The historical framework into which Series I must fit allows perhaps between 30 and 100 years. More likely then, in Series I classes and types flowed rapidly from the mint as small issues in quick succession, a situation which fits with the small surviving numbers of most Series I types. Additionally we have seen possible evidence for separate mints in Series I XIII (the 'Donkey-Rider'), and I XXXVIII (the 'Monkey'). Although multiple mints issuing different types in parallel would help to account for larger numbers of types in shorter periods, the extent of the territory issuing Series I (Map 5) may have been less than 500km long and probably quite narrow. Quite possibly one main mint handled the vast majority of the coinage until Magadha began a wider territorial expansion.

## SERIES I Catalogue

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 1 | I I A<br>Gol 821 & 829 |  |  |  | - | - |  1 |  2 |
| 2 | I I Aa<br>Gol 830 |  | - |  | - | - | | |
| 3 | I I B<br>Gol 819 |  |  |  |  | - |  3 |  4 |
| 4 | I I B 59<br>Gol 820 |  |  |  |  |  | | |
| 5 | I I C [1]<br>Gol 822 |  |  |  |  | - [1] |  5 |  6 |
| 6 | I I D<br>Gol 816-818 |  |  |  |  [1] | - | | |
| 7 | I I D 40<br>Gol 770, 813-815, RT |  |  |  |  [1] |  |  7 |  7a |
| 7a | I I D 484<br>BB |  |  |  |  [1] |  [2] | | |
| 7b | I I E<br>A |  |  | | | - |  7b |  7c |
| 7c | I I F<br>SH |  |  |  |  | - | | |
| 8 | I II A 1 [1]<br>A |  |  | |  [1] |  |  8 |  8a |
| 8a | I II B 167<br>PM |  |  | |  |  | | |
| 9 | I III A<br>Gol 793-799, 801, Pr 2A |  |  |  | | - |  9 |  10 |
| 10 | I III A 48<br>Gol 812 |  |  |  | |  [1] | | |

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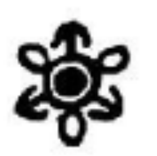
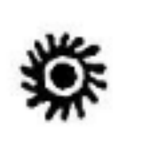
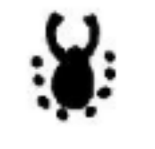
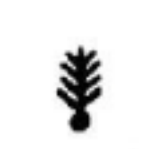
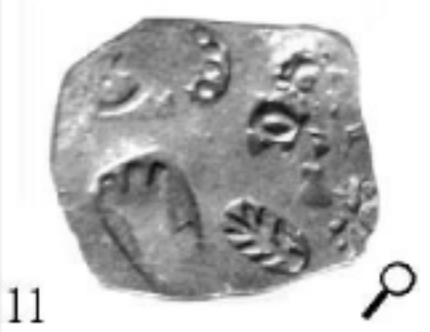
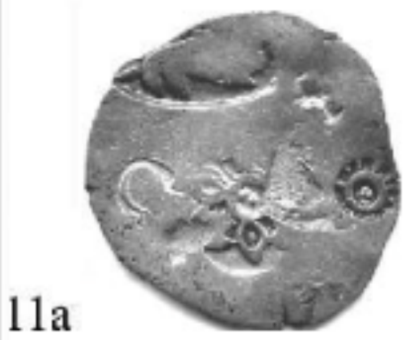
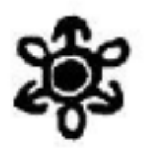
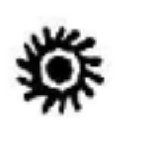
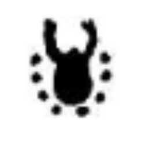
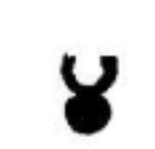
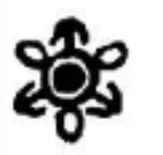
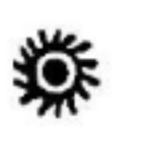
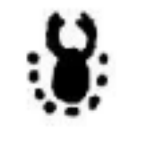
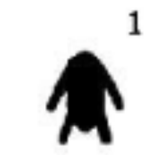
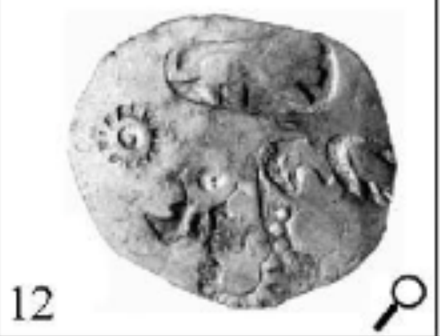
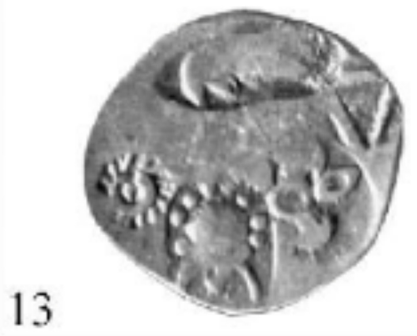
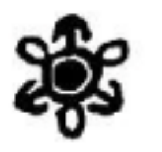
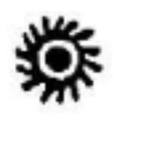
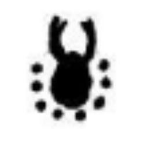
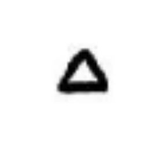
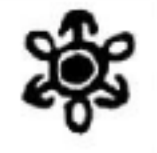
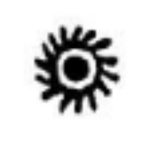
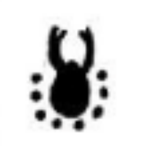
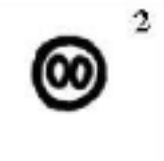
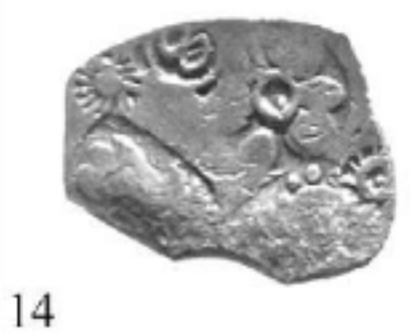
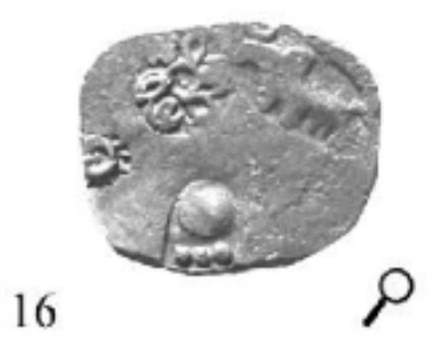
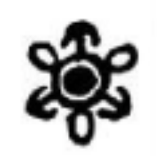
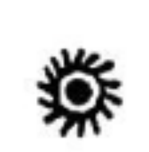
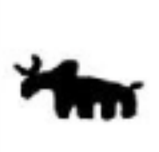
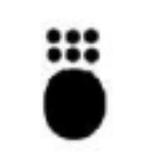
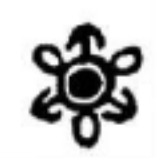
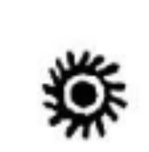
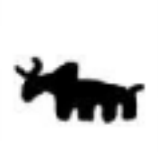
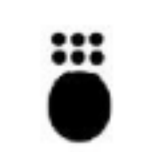
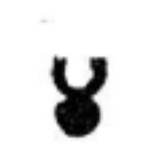
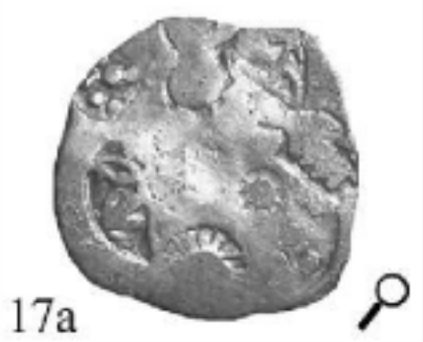
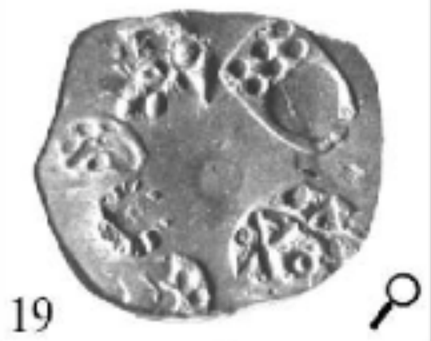
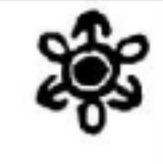
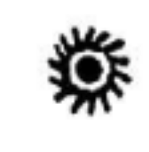
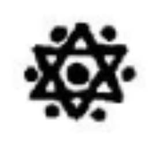
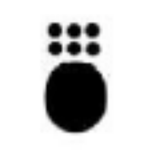
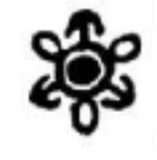
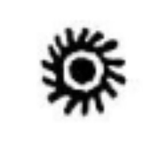
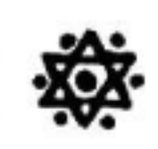
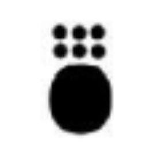
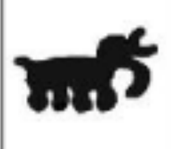
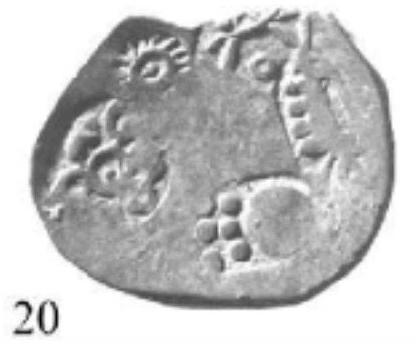
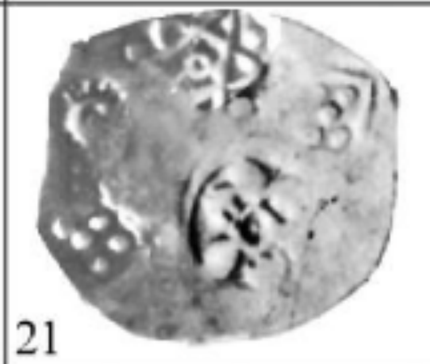
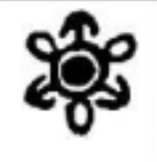
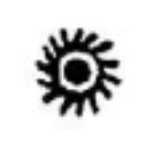
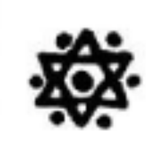
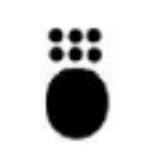
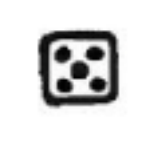
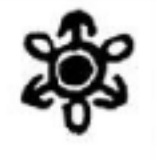
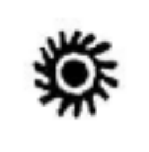
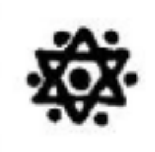
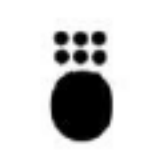
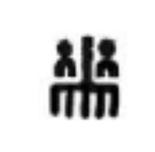
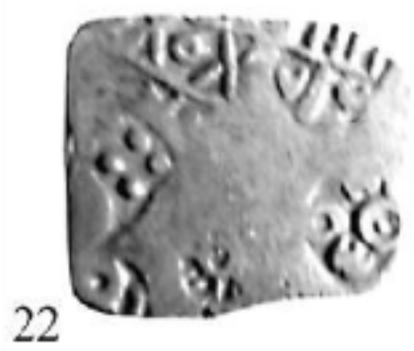
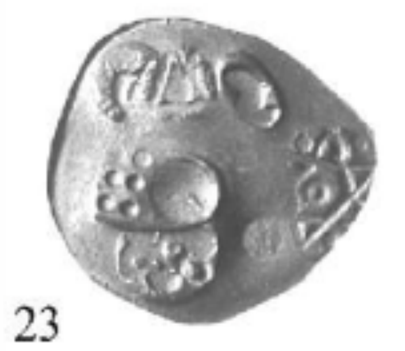
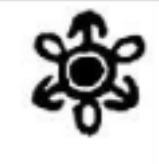
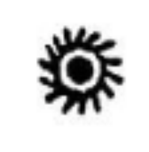
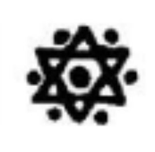
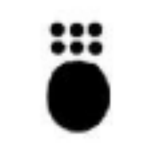
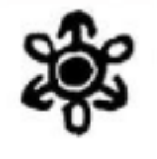
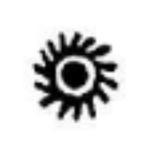
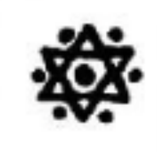
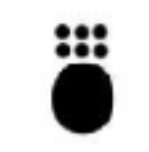
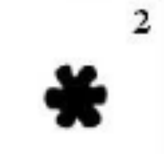
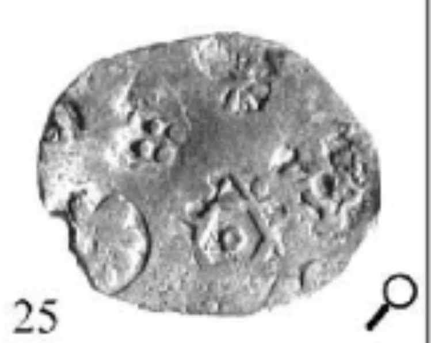
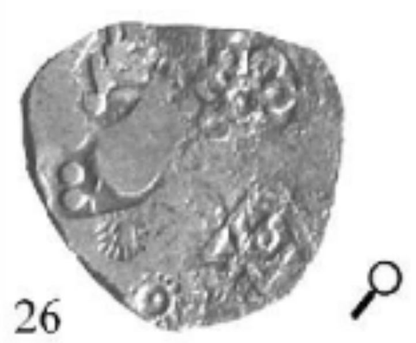
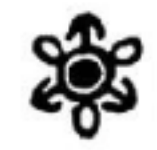
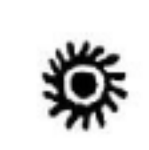
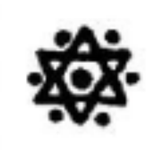
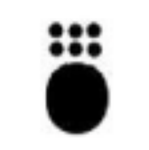
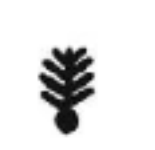
[1] Denotes changes to symbols or type numbers of Golakhpur coins since the first edition owing to the availability of improved photos.

[2] This symbol has raised dots within the taurine; it appears to be official.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 11 | I III A 51<br>Gol 802, Pr 2A2 |  |  |  | |  |  11 |  11a |
| 11a | I III A 167<br>Gol 793-799, 801, Pr 2A |  |  |  | |  | | |
| 12 | I III A 486<br>Gol 760, DM, Pr 2A3 |  |  |  | |  [1] |  12 |  13 |
| 13 | I III A 61<br>Gol 756, Pr 2A5 |  |  |  | |  | | |
| 14 | I III A 62<br>Gol 811 |  |  |  | |  [2] |  14 |  16 |
| [3] 16 | I IV A<br>Gol 792<br>Pr 1B1 |  |  |  |  | - | | |
| [4] 17a | I IV A 167<br>PT |  |  |  |  |  |  17a |  19 |
| [5] 19 | I IV B<br>Gol 735, 740, 763 |  |  |  |  | ?<br>- | | |
| [6] 20 | I IV B 1<br>Gol 734, Pr 1A1 |  |  |  |  |  |  20 |  21 |
| 21 | I IV B 4<br>Gol 765, Pr 1A7 |  |  |  |  |  | | |
| 22 | I IV B 28a<br>Gol 767, Pr 1 A 8 |  |  |  |  |  |  22 |  23 |
| 23 | I IV B 43<br>Gol 779, Pr 1A 14 |  |  |  |  | | | |
| [7] 25 | I IV B 48<br>Gol 752, Pr 1A 4 |  |  |  |  |  [2] |  25 |  26 |
| 26 | I IV B 51<br>Gol 759, Pr 1A 5 |  |  |  |  |  | | |

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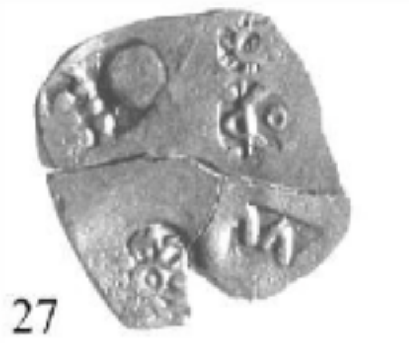
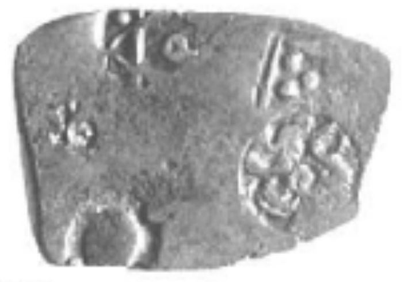
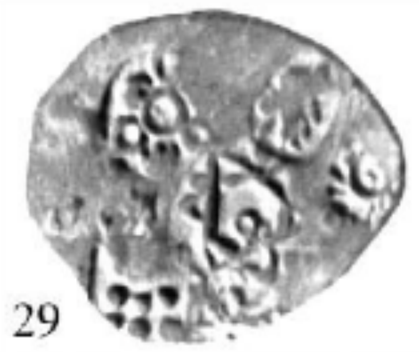
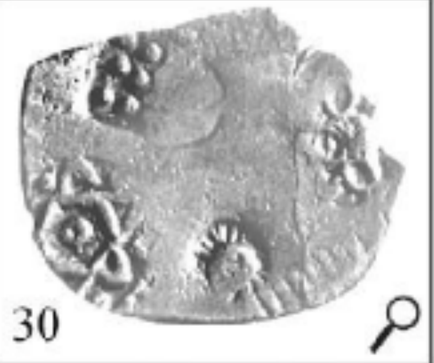
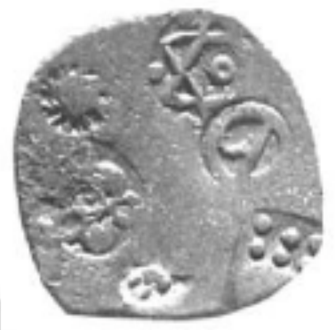
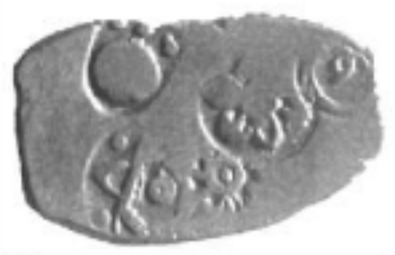
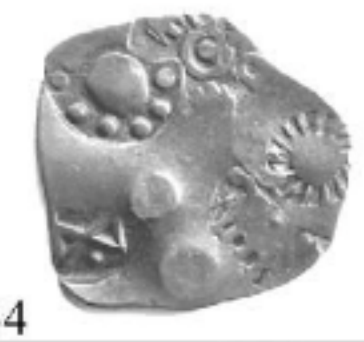
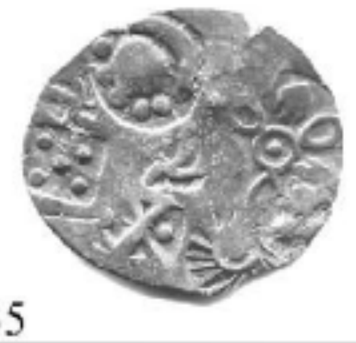
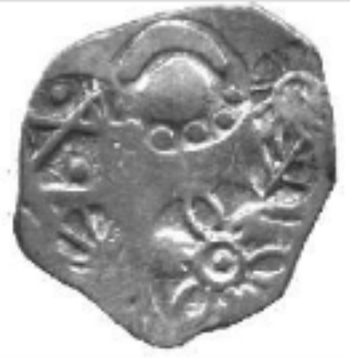
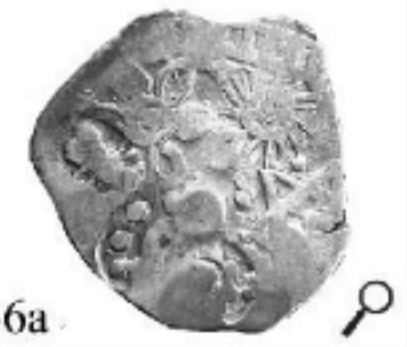
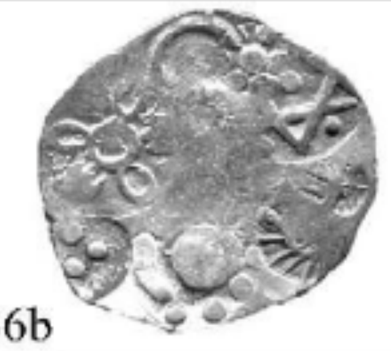
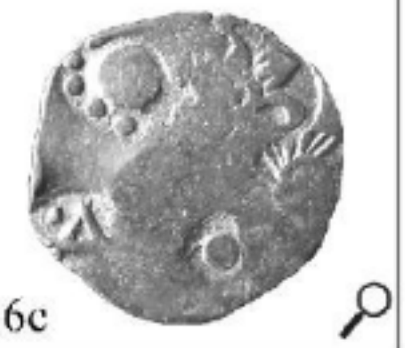
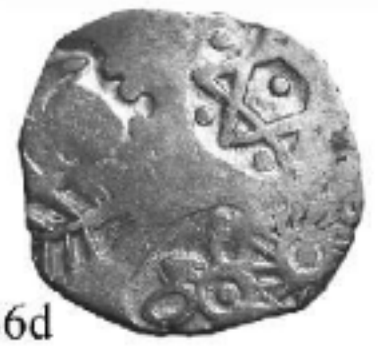
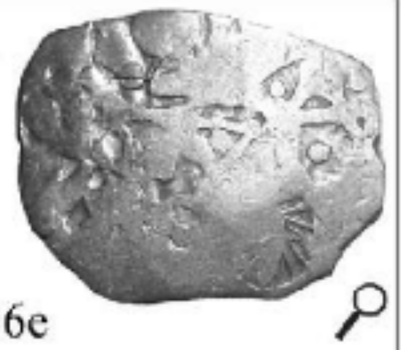
[1] Denotes changes to symbols or type numbers of Golakhpur coins since the first edition owing to the availability of improved photos.

[2] Changes to symbols or type numbers to Golakhpur coins through availability of improved photos. [3] Type 15 is the same as Type 1.

[4] Type 17 is the same as Type 16. [5] Type 18 is omitted. [6] Type 19 is represented by three Golakhpur coins all with fifth marks that may be unofficial.

[7] Type 24 is the same as Type 32.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| 27 | I IV B 53<br>Gol 776, 777,<br>Pr 1A 12 | | | | | |  27  28 |
| 28 | I IV B 63<br>Gol 764, Pr 1A6 | | | | | | |
| 29 | I IV B 64<br>Gol 742, 845, 748<br>Pr 1A3 | | | | | [1] |  29  30 |
| 30 | I IV B 65<br>Gol 768, Pr 1A9 | | | | | ? | |
| 31 | I IV B 66<br>Gol 733, Pr 1A10 ? | | | | | |  31  32 |
| 32 | I IV B 67<br>Gol 769, 771 | | | | | [1] | |
| 34[2] | I IV C 1<br>PoW Mus; A | | | | | |  34  35 |
| 35 | I IV C 4<br>A | | | | | | |
| 36 | I IV C 29<br>PoW Mus, A | | | | | |  36  36a |
| 36a | I IV C 35<br>PT | | | | | | |
| 36b | I IV C 44<br>SH | | | | | |  36b  36c |
| 36c | I IV C 45<br>PT | | | | | [3] | |
| 36d | I IV C 52<br>PT | | | | | |  36d  36e |
| 36e | I IV C 54<br>PT | | | | | | |

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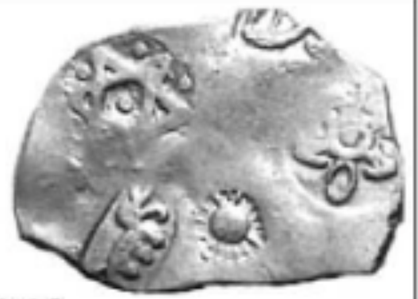
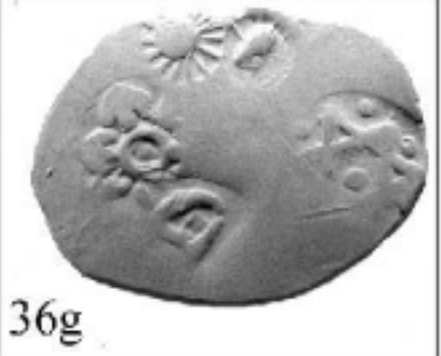
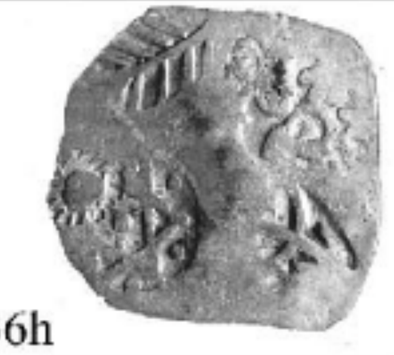
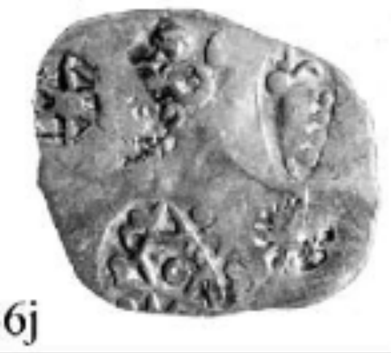
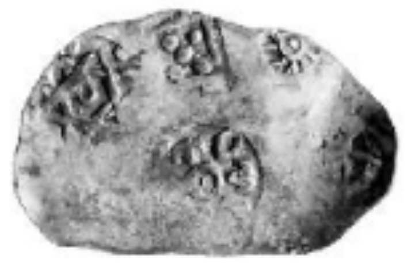
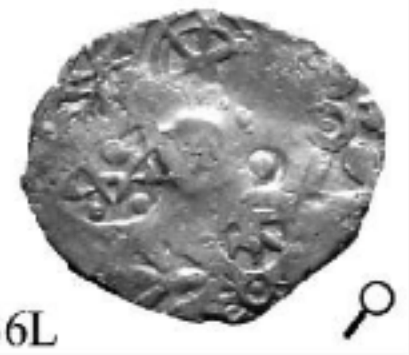
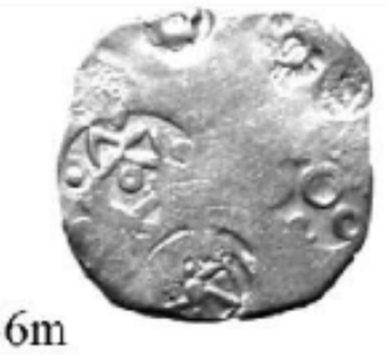
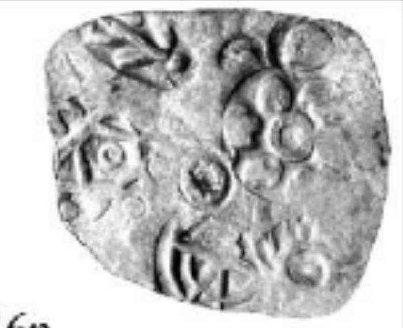
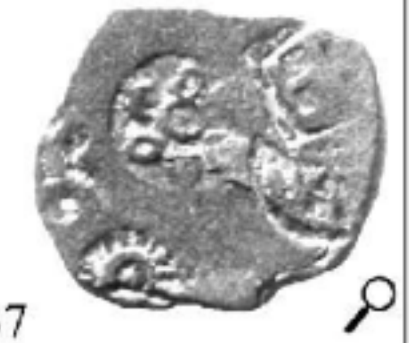
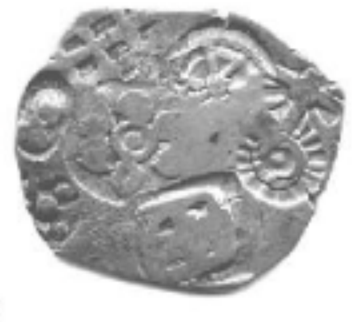
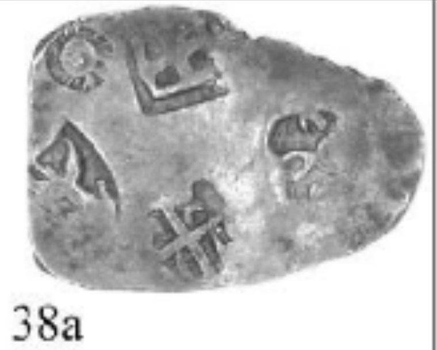
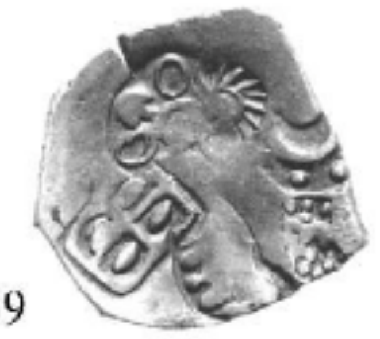
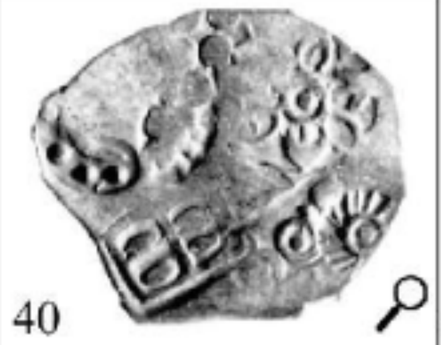
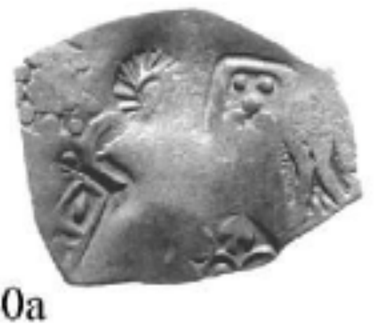
[1] Changes to symbols or type numbers to Golakhpur coins through availability of improved photos.

[2] Type 33 is omitted; the assumed fifth mark is unofficial.

[3] The circle round the dot needs verification

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| 36f | I IV D 1<br>SH | | | | | |  36f  36g |
| 36g[1] | I IV D 45<br>MB | | | | | | |
| 36h[2] | I IV D 51<br>MB | | | | | |  36h  36j |
| 36j | I IV E 1<br>DM | | | | | | |
| 36k | I IV E 4<br>DM | | | | | |  36k  36L |
| 36L | I IV E 30<br>RT | | | | | | |
| 36m | I IV E 35<br>RT | | | | | |  36m  36n |
| 36n | I IV E 51<br>DM | | | | | | |
| 37 | I V A<br>Gol 828 | | | | | [3] ? |  37  38 |
| 38 | I V A 69<br>Gol 824-825, A | | | | | | |
| 38a | I V B 28a<br>RT | | | | | |  38a  39 |
| 39 | I VI A 1<br>Aur, BM | | | | | | |
| 40 | I VI A 2<br>Aur, A | | | | | |  40  40a |
| 40a | I VI A 4<br>RT | | | | | | |

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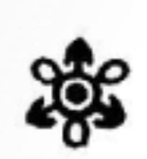
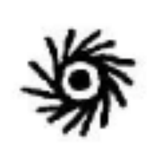
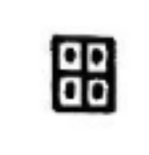
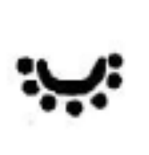
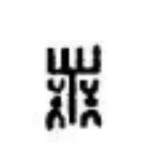
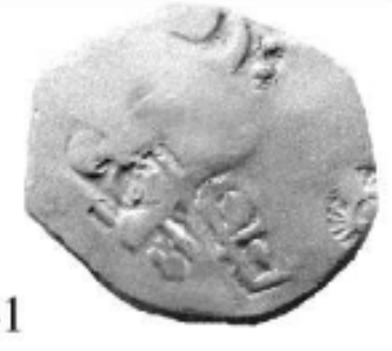
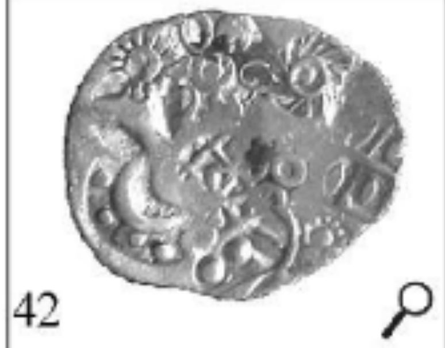
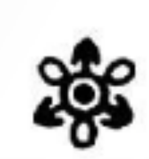
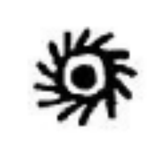
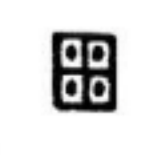
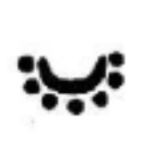
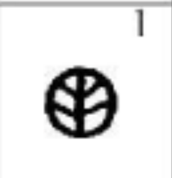
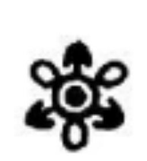
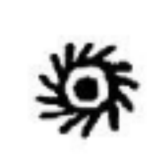
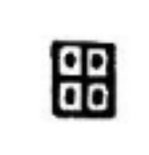
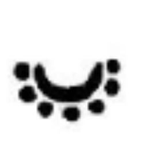
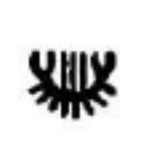
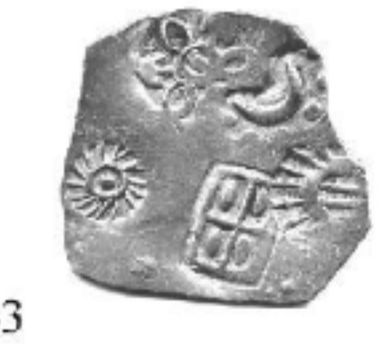
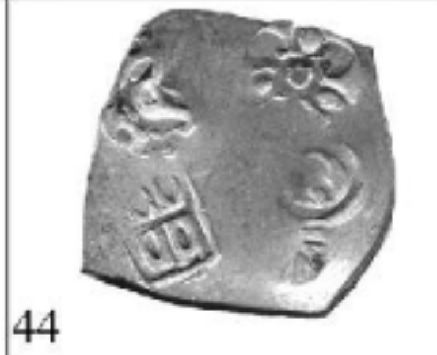
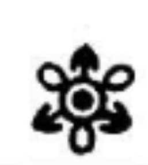
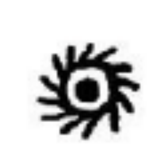
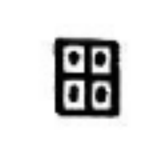
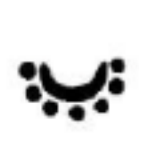
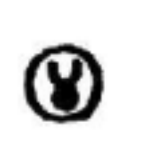
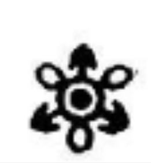
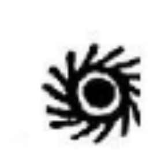
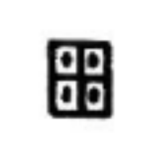
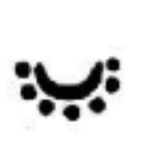
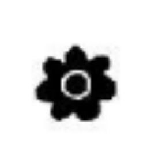
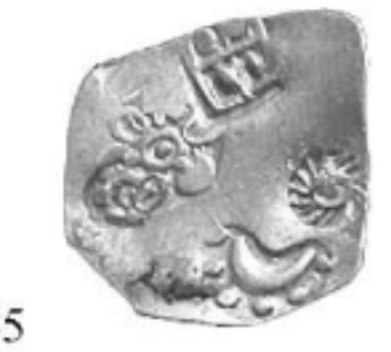
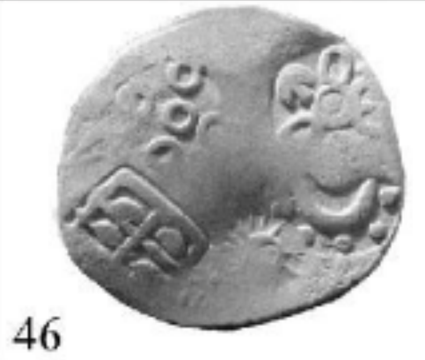
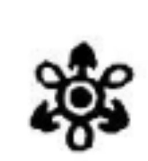
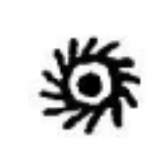
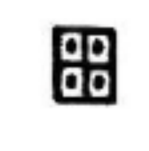
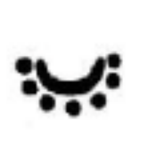
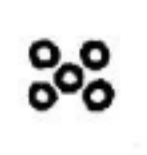
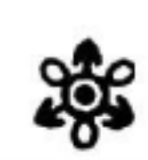
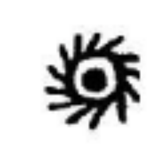
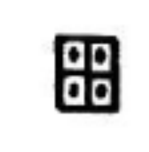
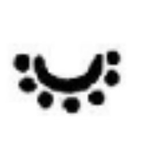
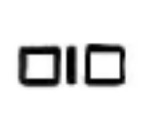
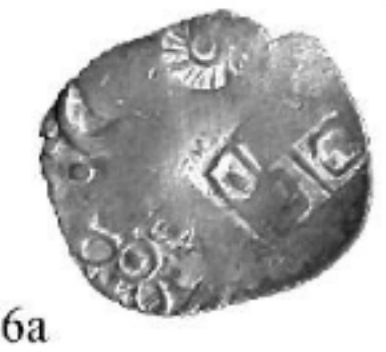
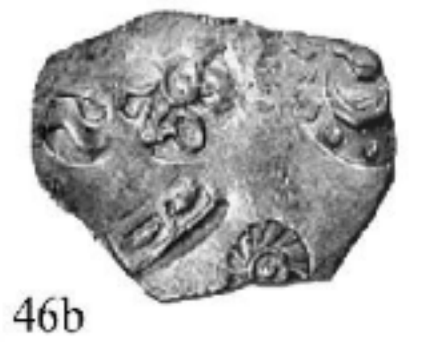
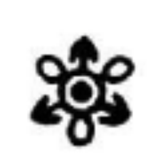
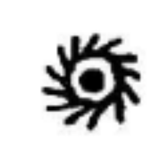
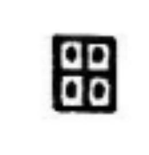
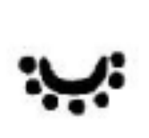
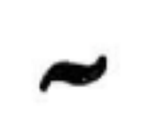
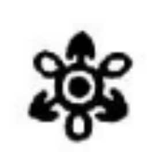
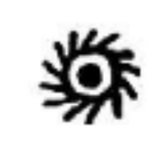
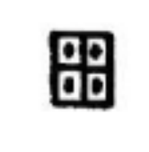
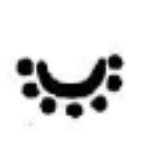
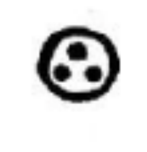
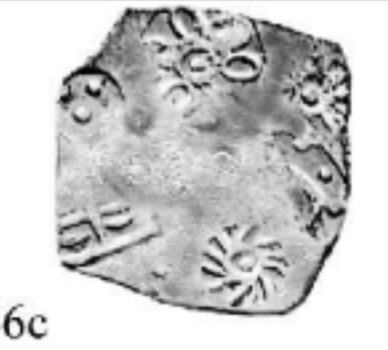
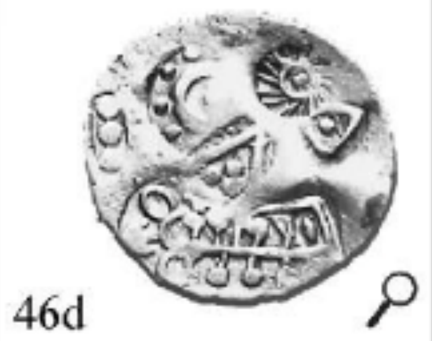
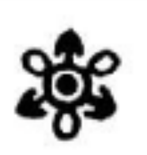
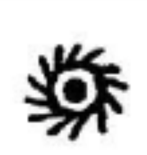
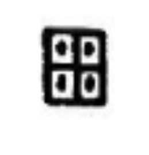
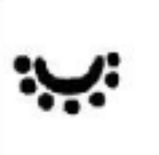
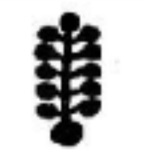
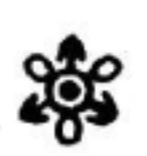
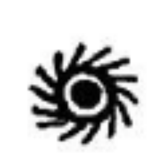
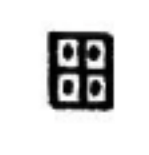
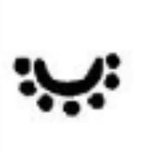
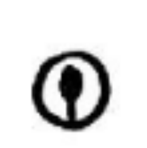
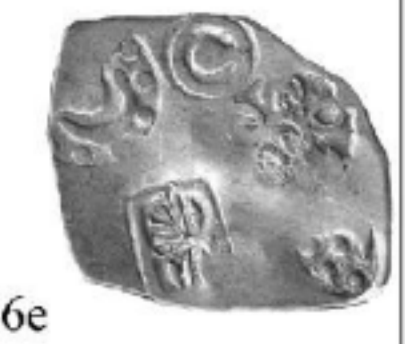
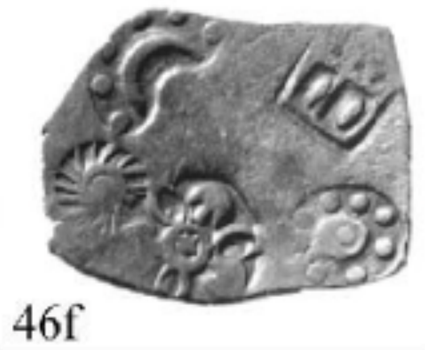
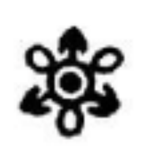
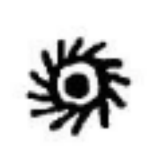
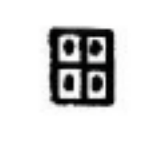
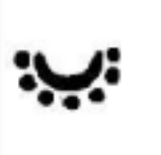
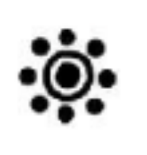
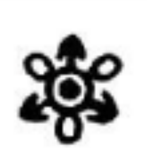
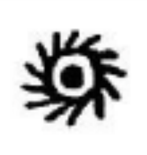
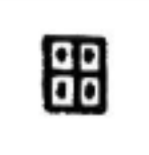
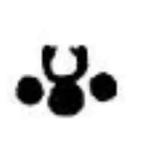
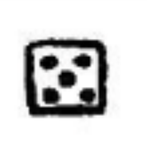
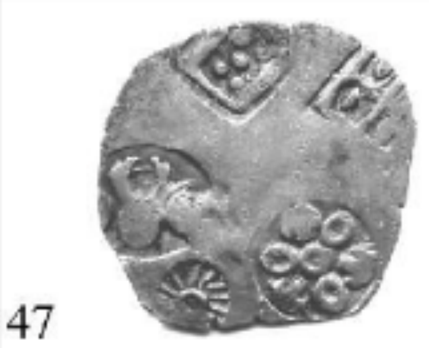
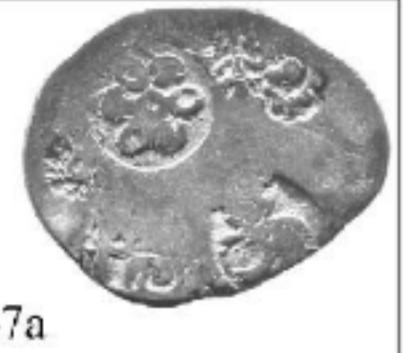
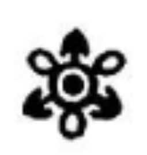
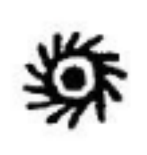
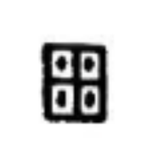
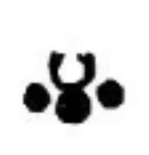
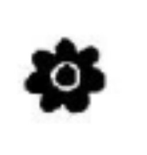
[1] Formerly Type 217 [2] Formerly Type 218 [3] The sole example of this type in the Golakhpur hoard has a fifth symbol of uncertain form.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 41 | I VI A 28<br>A |  |  |  |  |  |  41 |  42 |
| 42 | I VI A 29<br>Jaun, BKB, A<br>Bar |  |  |  |  |  [1] | | |
| 43 | I VI A 30<br>A |  |  |  |  |  |  43 |  44 |
| 44 | I VI A 34<br>Jaun, A |  |  |  |  |  | | |
| 45 | I VI A 35<br>Aur, SS |  |  |  |  |  |  45 |  46 |
| 46 | I VI A 38<br>MB |  |  |  |  |  | | |
| 46a | I VI A 42?<br>SS |  |  |  |  |  |  46a |  46b |
| 46b | I VI A 43<br>A |  |  |  |  |  | | |
| 46c | I VI A 47<br>RA |  |  |  |  |  |  46c |  46d |
| 46d | I VI A 72<br>SS |  |  |  |  |  | | |
| 46e | I VI A 76<br>PM |  |  |  |  |  |  46e |  46f |
| 46f | I VI A 487<br>RT |  |  |  |  |  | | |
| 47 | I VI B 4<br>A |  |  |  |  |  |  47 |  47a |
| 47a | I VI B 35<br>A, Bar |  |  |  |  |  | | |

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[1] The fifth mark is located just above the two prominent dots at the foot of the coin.

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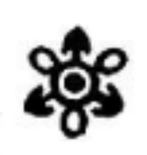
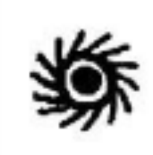
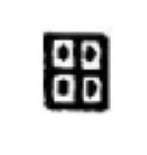
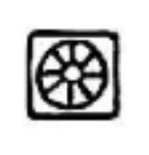
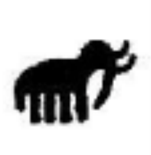
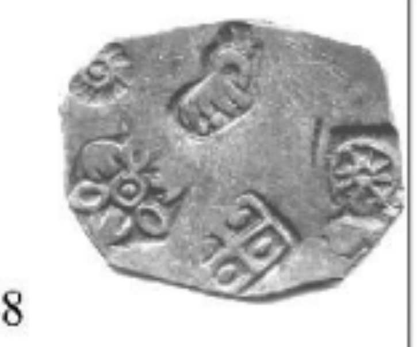
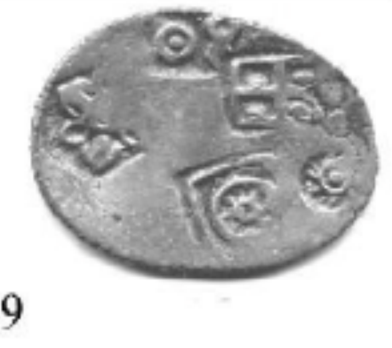
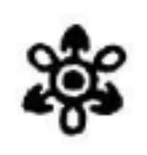
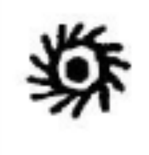
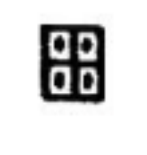
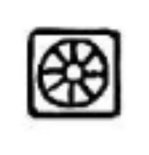
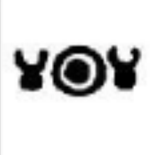
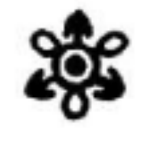
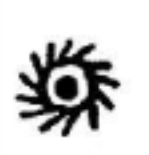
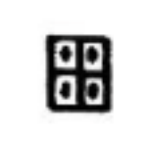
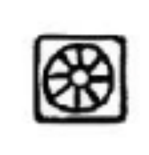
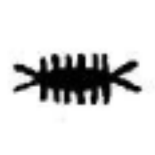
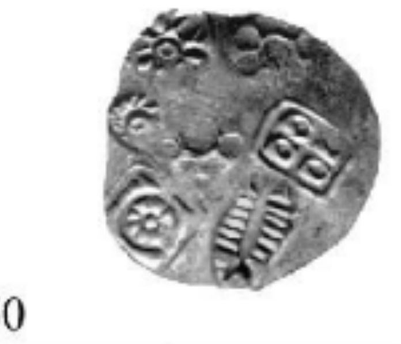
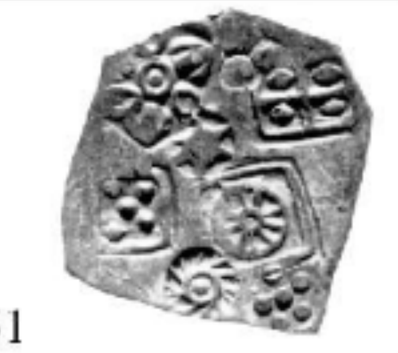
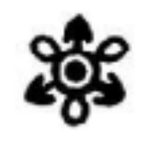
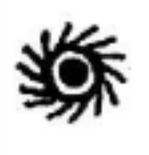
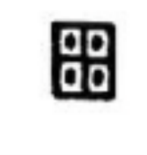
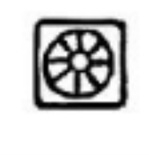
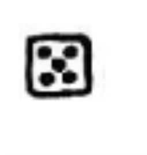
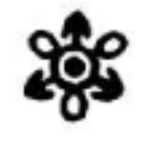
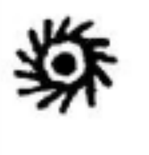
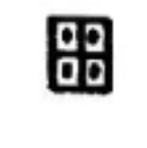
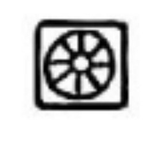
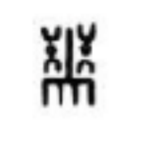
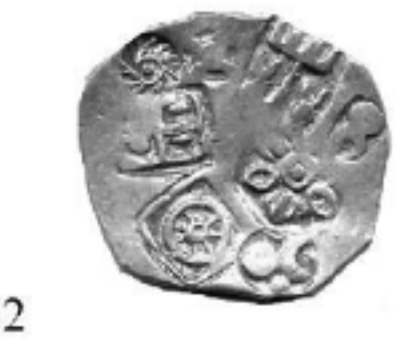
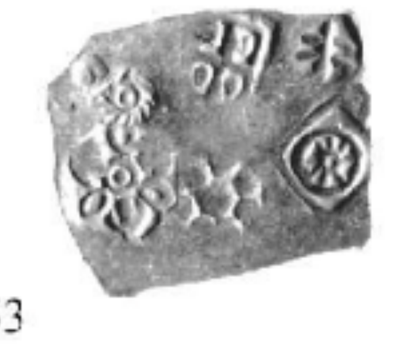
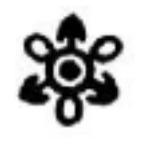
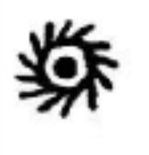
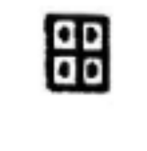
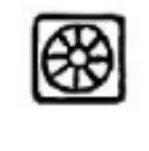
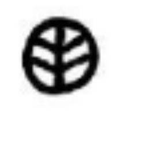
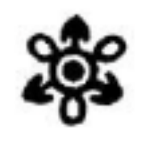
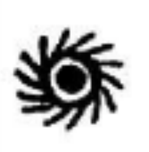
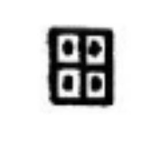
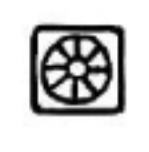
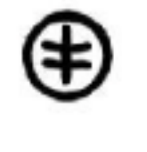
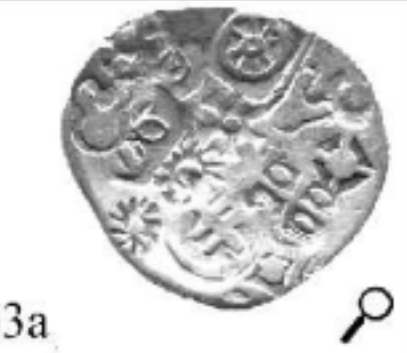
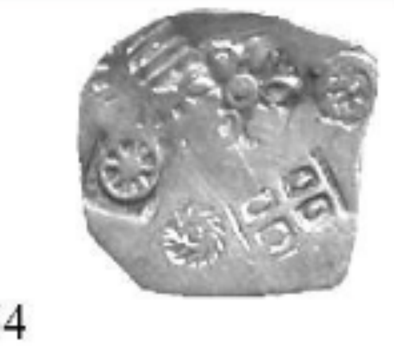
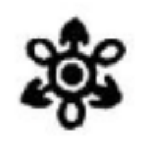
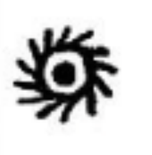
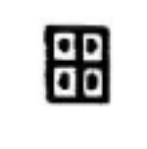
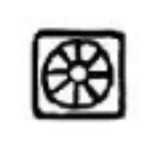
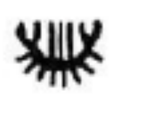
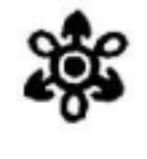
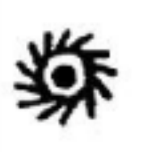
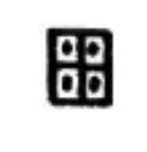
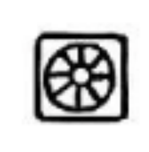
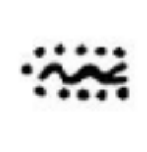
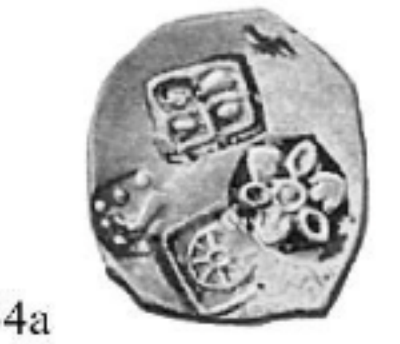
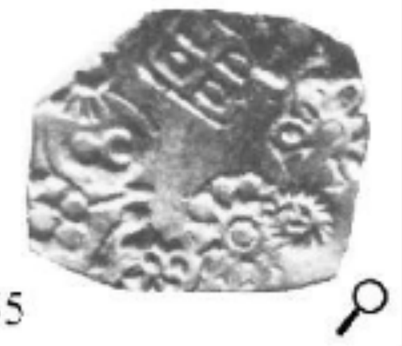
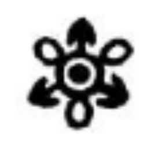
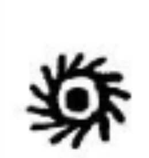
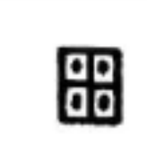
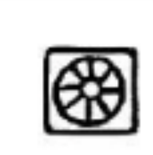
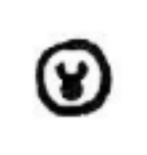
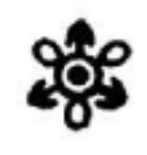
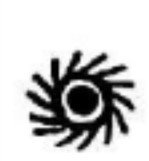
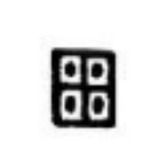
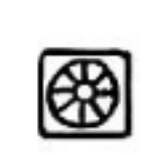
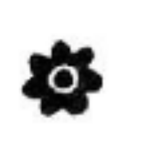
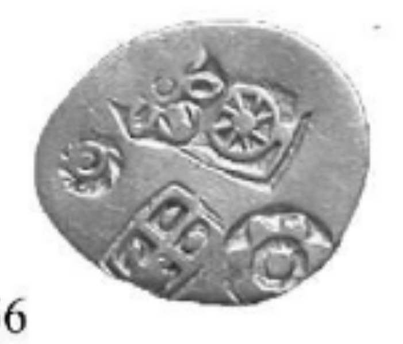
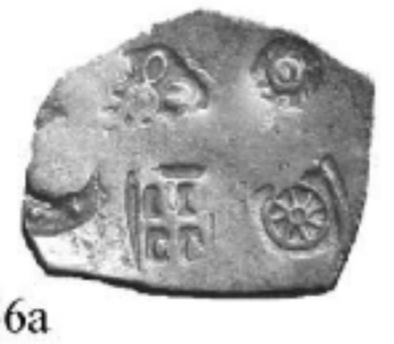
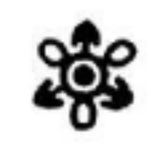
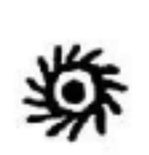
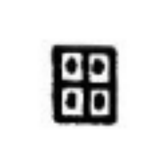
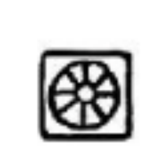
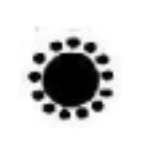
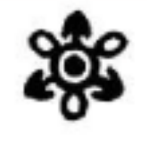
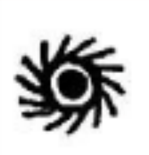
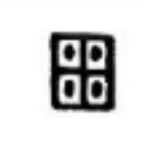
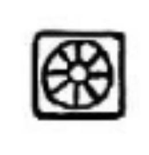
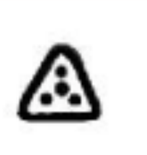
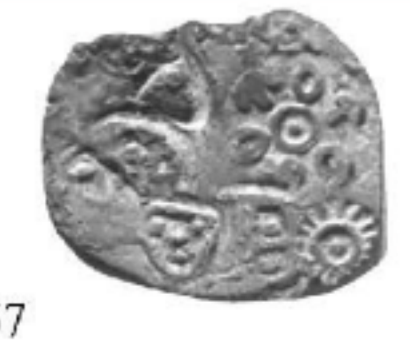
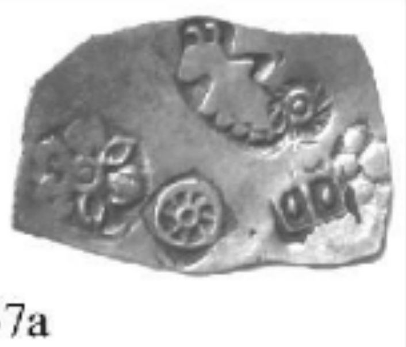
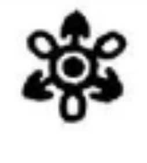
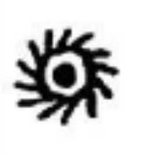
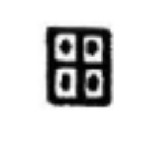
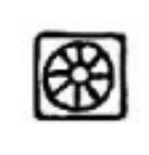
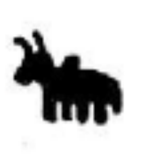
## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 48 | I VI C 1<br>Aur, A |  |  |  |  |  |  48 |  49 |
| 49 | I VI C 2<br>Aur, BKB, A |  |  |  |  |  | | |
| 50 | I VI C 3<br>Aur, Trade |  |  |  |  |  |  50 |  51 |
| 51 | I VI C 4<br>Aur, BM |  |  |  |  |  | | |
| 52 | I VI C 28<br>Aur, AF |  |  |  |  |  |  52 |  53 |
| 53 | I VI C 29<br>Aur, BM |  |  |  |  |  | | |
| 53a | I VI C 29a<br>Trade |  |  |  |  |  |  53a |  54 |
| 54 | I VI C 30<br>Aur, SS |  |  |  |  |  | | |
| 54a | I VI C 33<br>Barg |  |  |  |  |  |  54a |  55 |
| 55 | I VI C 34<br>Aur, A |  |  |  |  |  | | |
| 56 | I VI C 35<br>Aur, BKB, SS |  |  |  |  |  |  56 |  56a |
| 56a | I VI C 39<br>PT, Barg |  |  |  |  |  | | |
| 57 | I VI C 40a [1]<br>Gol 823,Prasad 4A1 |  |  |  |  |  |  57 |  57a |
| 57a | I VI C 46<br>PM |  |  |  |  |  | | |

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[1] See discussion in the Introduction to Series I under 'Golakhpur and Aurihar Hoards'.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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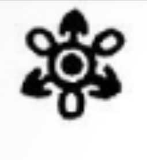
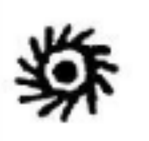
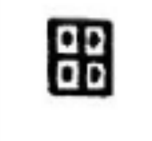
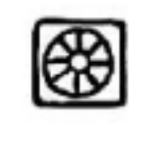
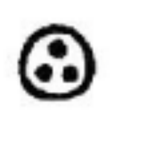
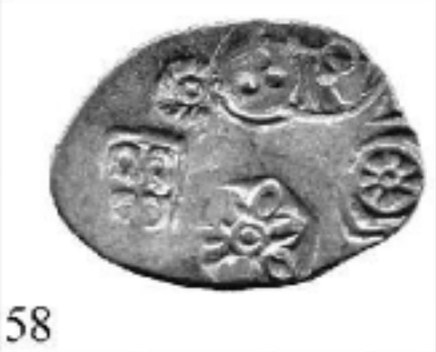
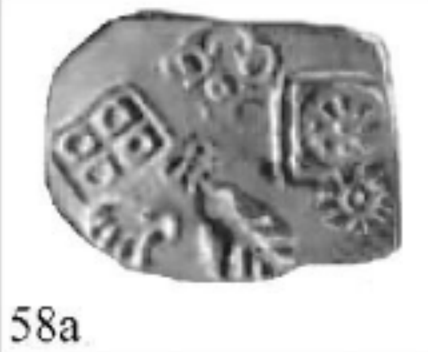
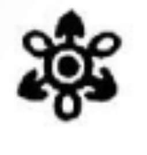
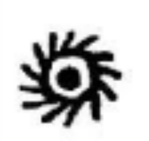
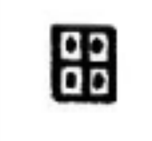
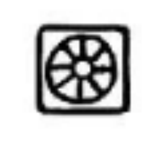
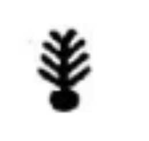
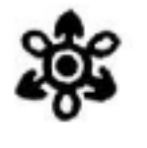
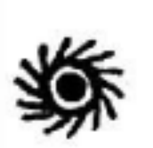
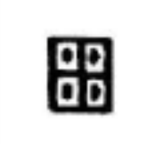
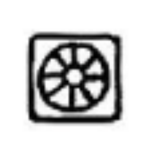
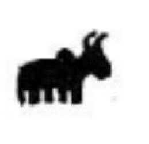
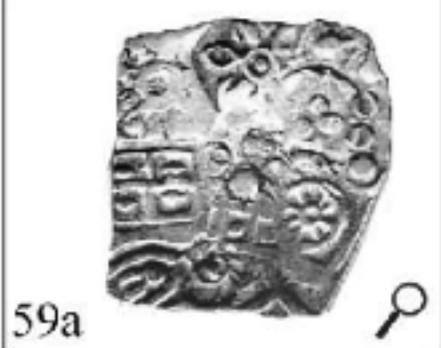
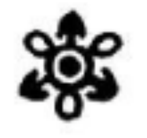
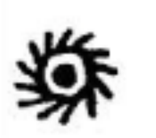
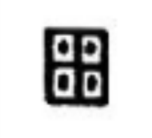
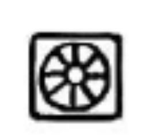
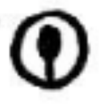
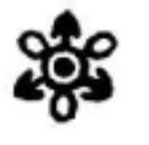
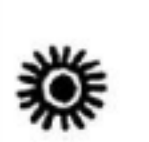
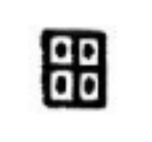
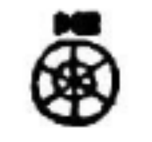
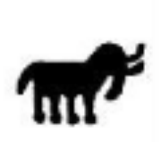
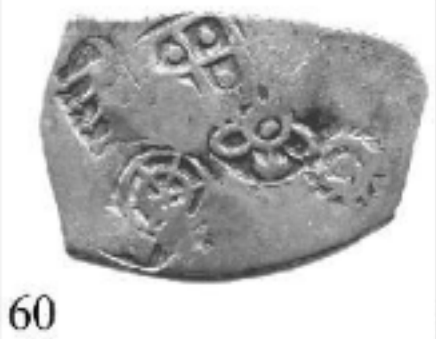
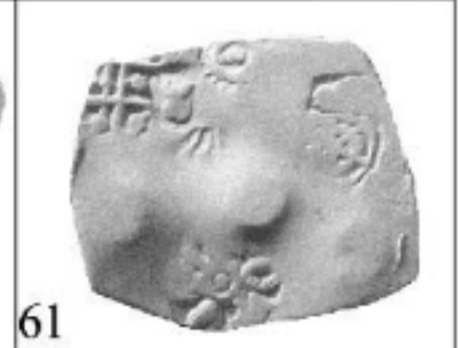
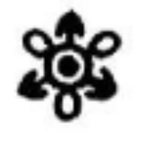
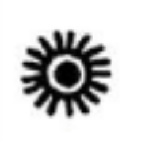
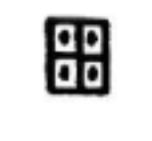
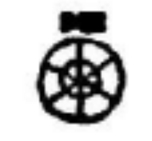
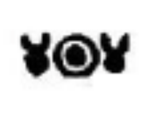
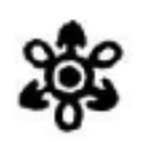
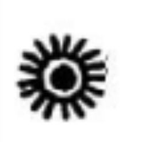
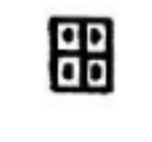
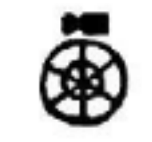
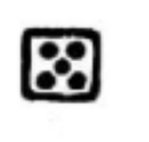
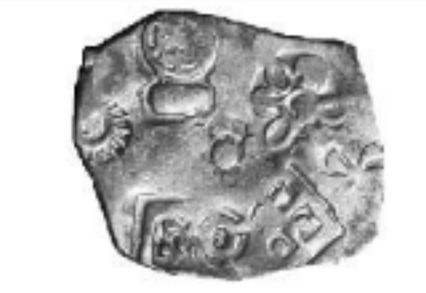
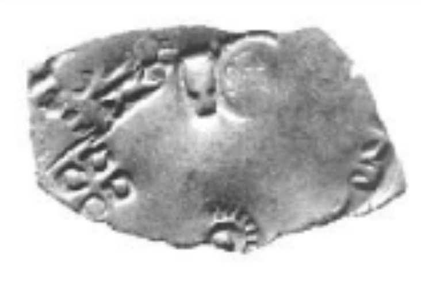
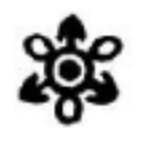
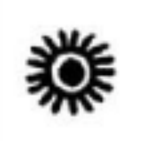
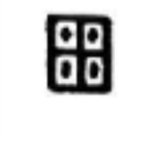
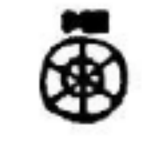
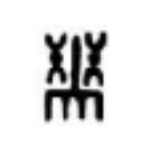
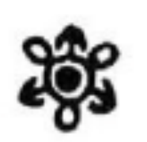
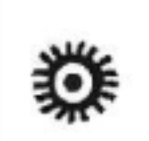
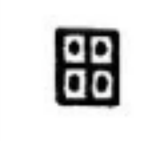
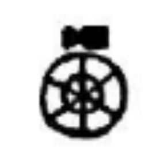
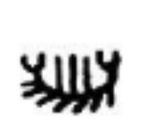
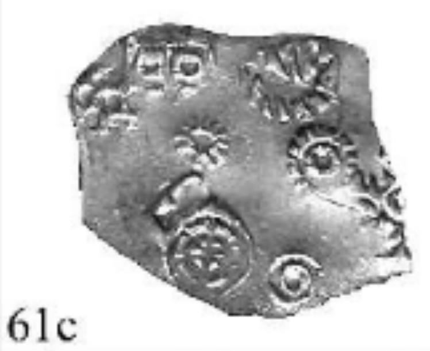
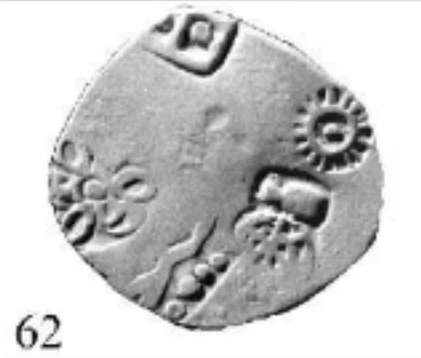
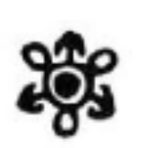
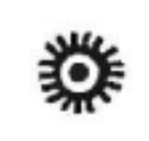
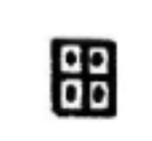
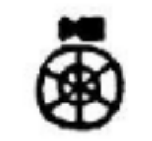
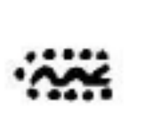
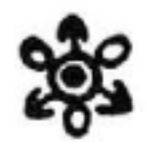
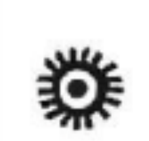
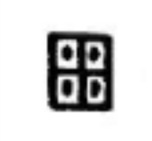
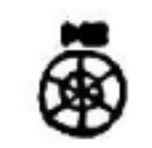
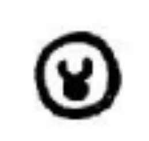
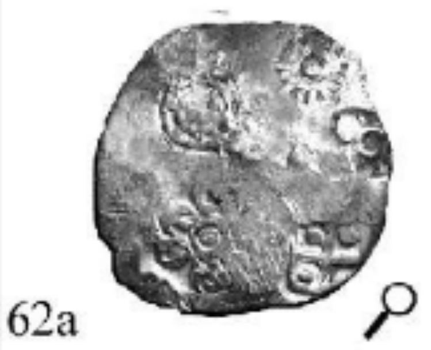
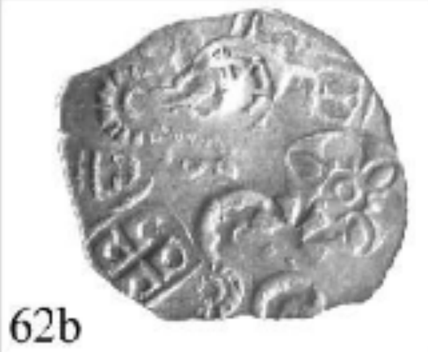
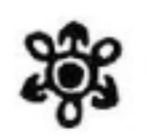
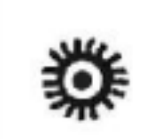
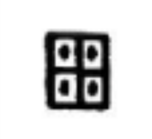
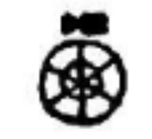
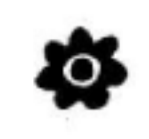
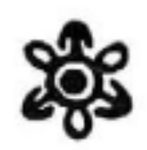
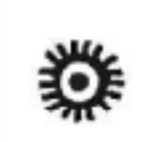
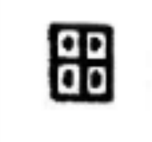
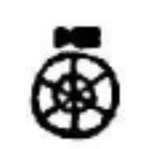
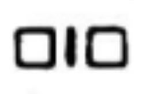
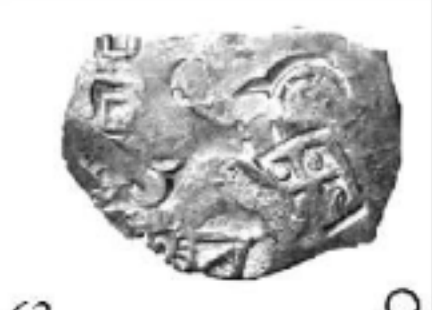
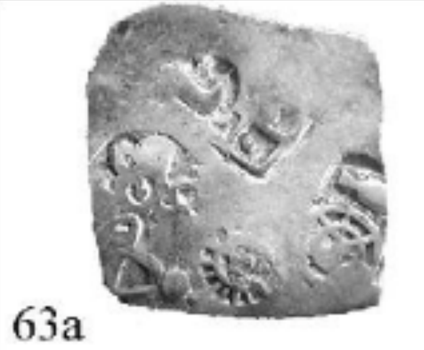
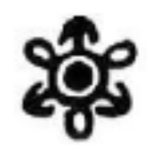
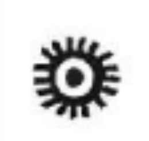
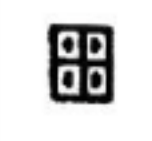
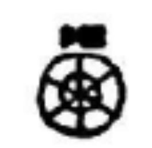
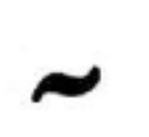
| | | 1 | 2 | 3 | 4 | 5 | | |
| 58 | I VI C 47<br>Aur, A |  |  |  |  |  |  58 |  58a |
| 58a | I VI C 51<br>PM, Barg |  |  |  |  |  | | |
| 59 | I VI C 58<br>Aur |  |  |  |  |  | no image available<br>59 |  59a |
| 59a | I VI C 76<br>PT |  |  |  |  | ?  [1] | | |
| 60 | I VI D 1<br>A |  |  |  |  |  |  60 |  61 |
| 61 | I VI D 2<br>A |  |  |  |  |  | | |
| 61a | I VI D 4<br>SS |  |  |  |  |  |  61a |  61b |
| 61b | I VI D 28<br>BM |  |  |  |  |  | | |
| 61c | I VI D 32<br>SS |  |  |  |  |  |  61c |  62 |
| 62 | I VI D 33<br>A |  |  |  |  |  | | |
| 62a | I VI D 34<br>PT |  |  |  |  |  |  62a |  62b |
| [2] 62b | I VI D 35<br>A |  |  |  |  |  | | |
| 63 | I VI D 42<br>Aur, PT |  |  |  |  | [3]  |  63 |  63a |
| 63a | I VI D 43<br>PT |  |  |  |  |  | | |

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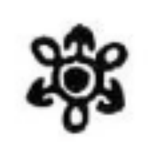
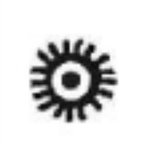
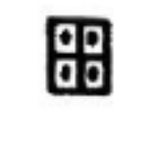
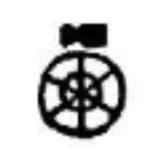
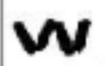
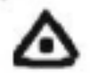
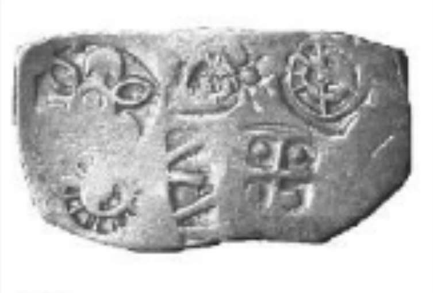
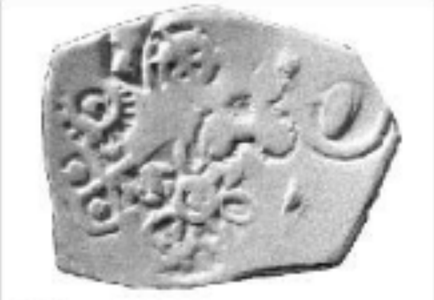
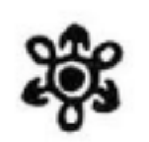
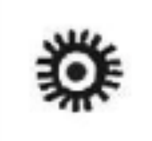
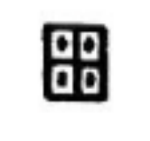
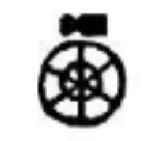
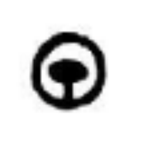
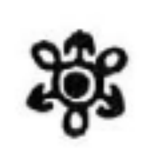
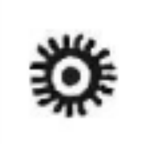
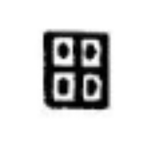
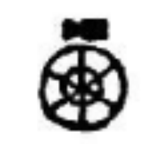
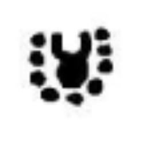
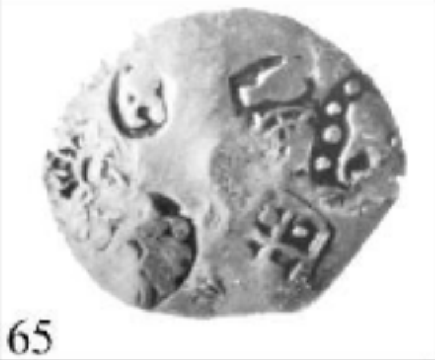
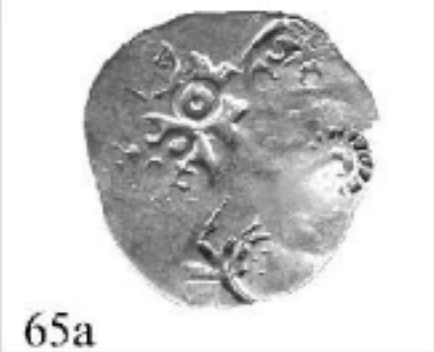
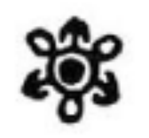
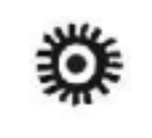
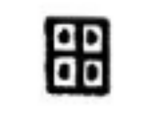
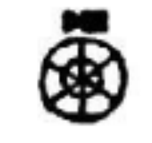
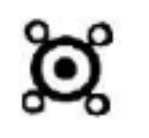
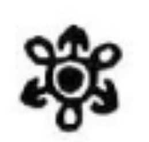
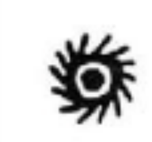
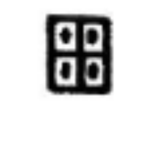
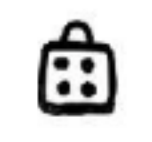
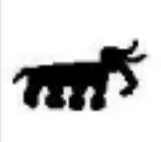
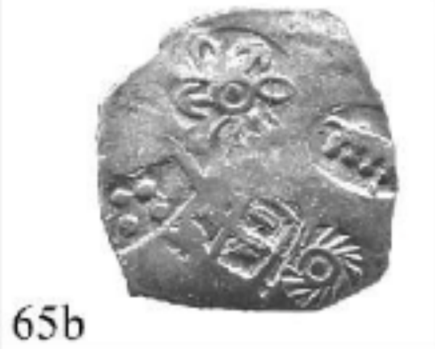
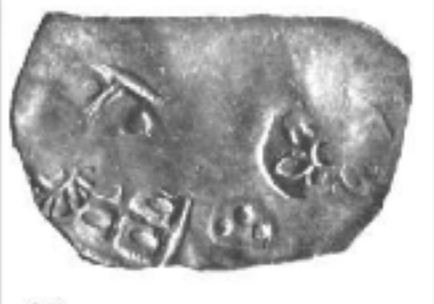
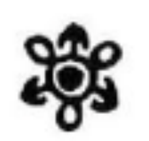
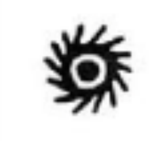
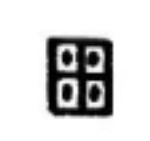
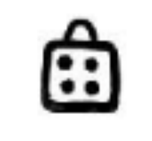
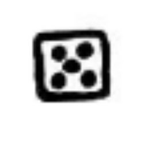
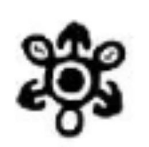
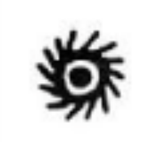
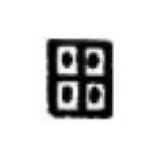
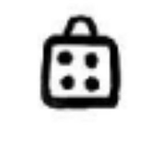
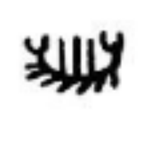
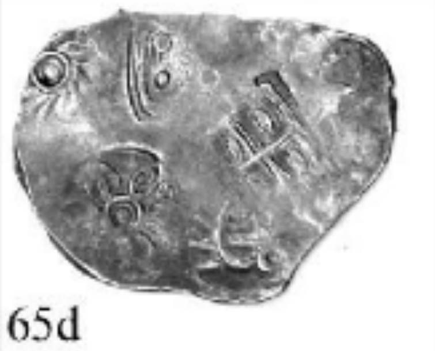
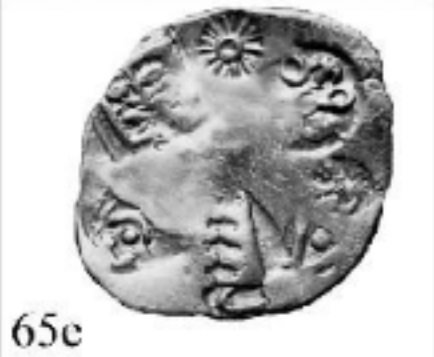
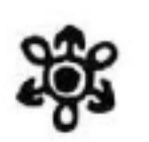
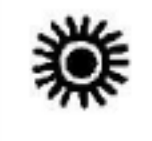
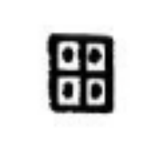
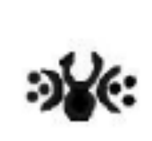
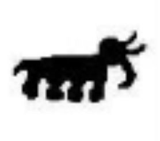
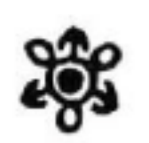
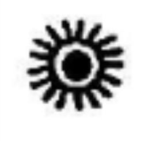
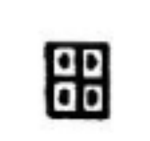
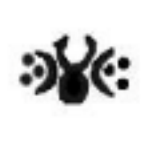
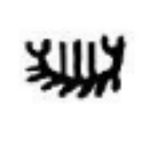
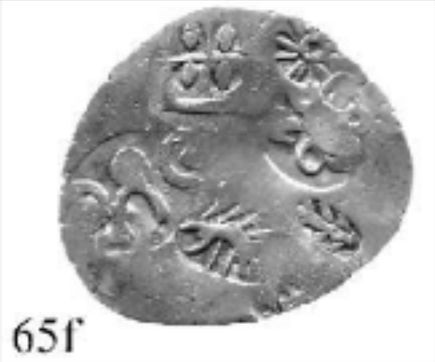
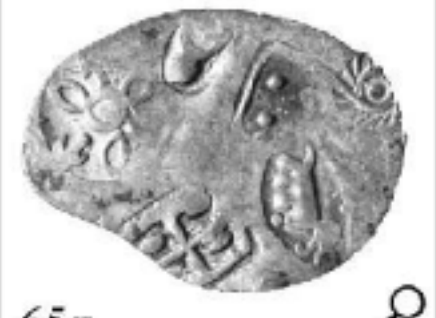
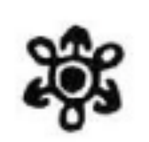
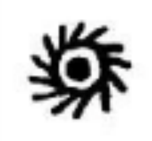
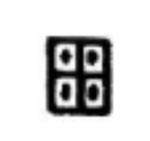
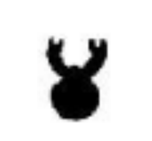
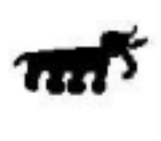
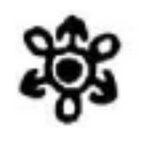
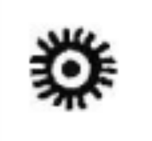
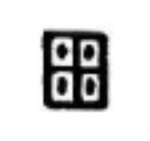
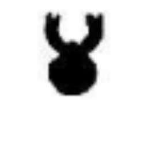
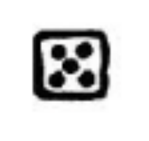
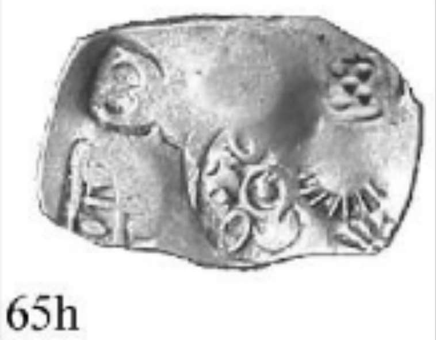
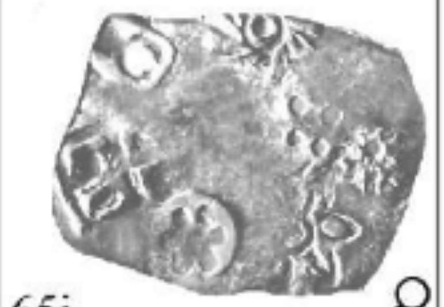
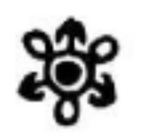
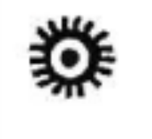
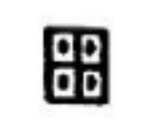
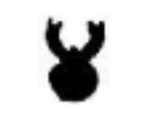
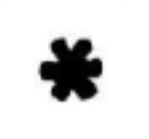
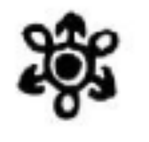
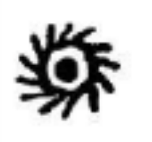
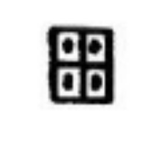
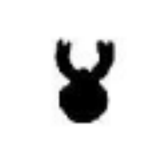
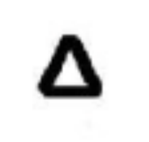
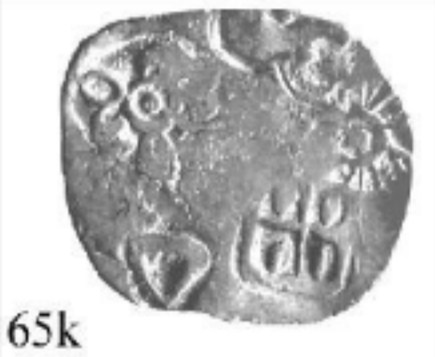
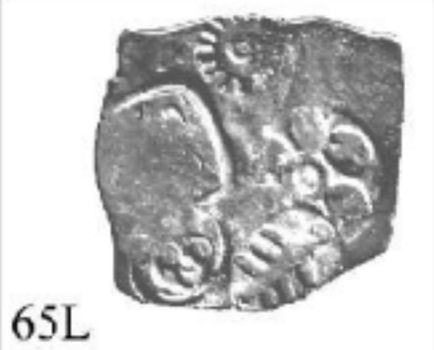
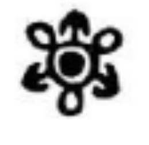
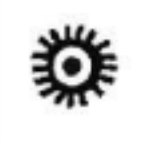
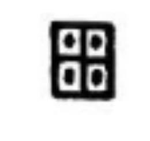
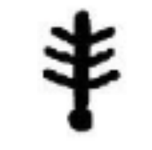
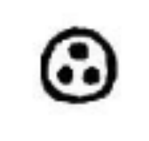
[1] The sole example has many extra marks; the proposed one is not certain. [2] Previously 62a in the First Edition

[3] Symbol 42 occurs with both open and solid squares.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 63b | I VI D 53/54<br>PT |  |  |  |  |  or  |  63b |  64 |
| 64 | I VI D175<br>A |  |  |  |  |  | | |
| 65 | I VI D 70<br>Ash |  |  |  |  |  |  65 |  65a |
| 65a | I VI D 488<br>DM, Barg |  |  |  |  |  | | |
| 65b | I VI E 1<br>A |  |  |  |  |  |  65b |  65c |
| 65c | I VI E 4<br>BM |  |  |  |  |  | | |
| 65d | I VI E 32<br>BM |  |  |  |  |  |  65d |  65e |
| 65e | I VI F 1<br>RT |  |  |  |  |  | | |
| 65f | I VI F 32<br>PM |  |  |  |  |  |  65f |  65g |
| 65g | I VI G 1 [1]<br>SS |  |  |  |  |  | | |
| 65h | I VI G 4<br>DM |  |  |  |  |  |  65h |  65j |
| 65j | I VI G 48 [2]<br>BM |  |  |  |  |  | | |
| 65k | I VI G 61<br>BM |  |  |  |  |  |  65k |  65L |
| 65L | I VI H 490<br>BM |  |  |  |  |  | | |

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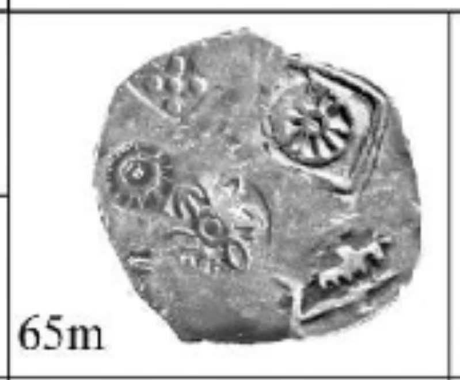
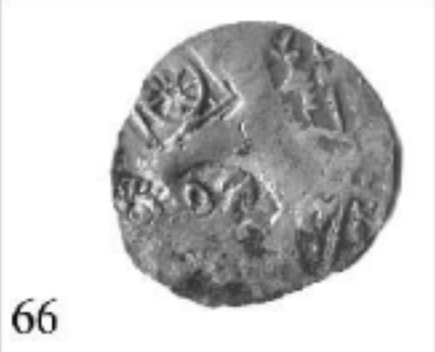
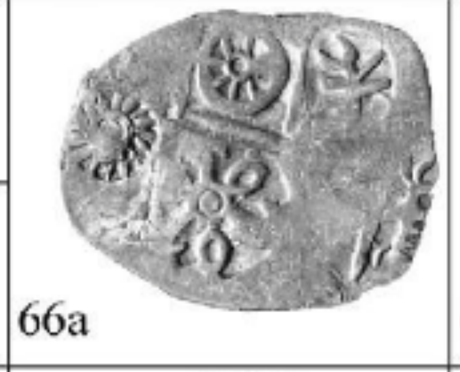
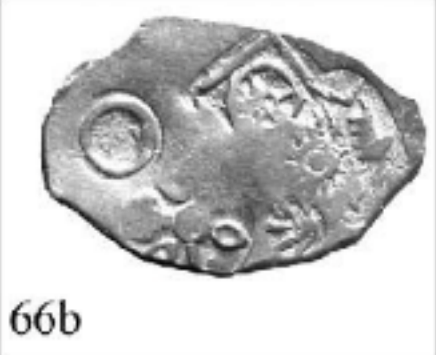
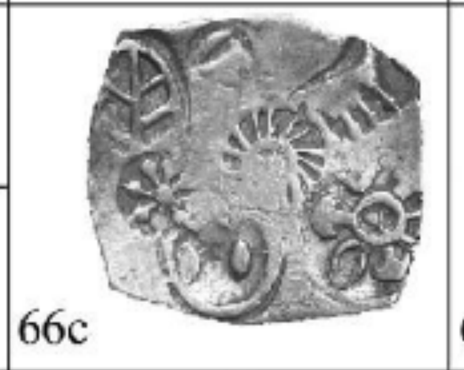
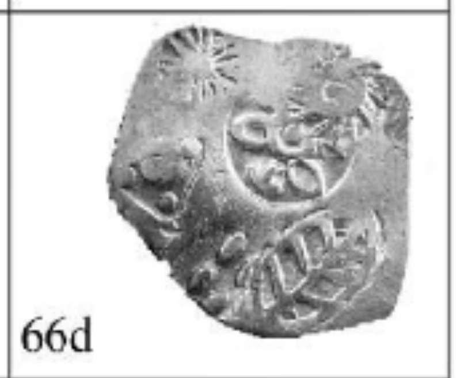
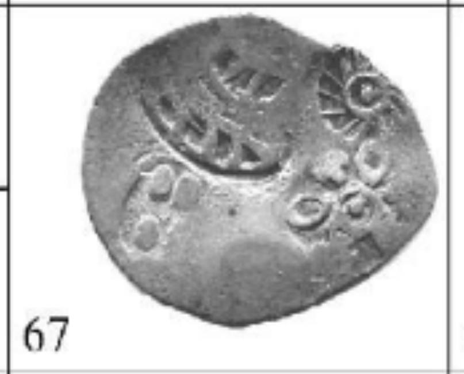
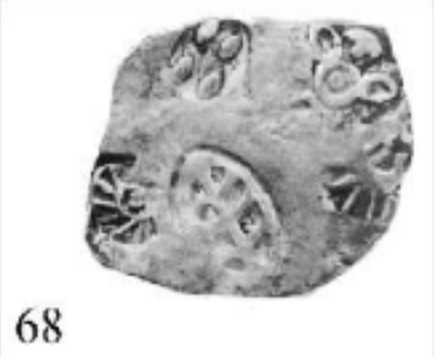
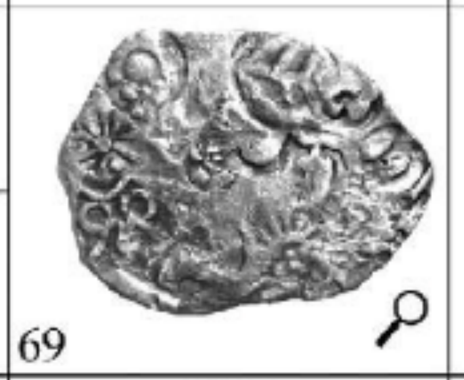
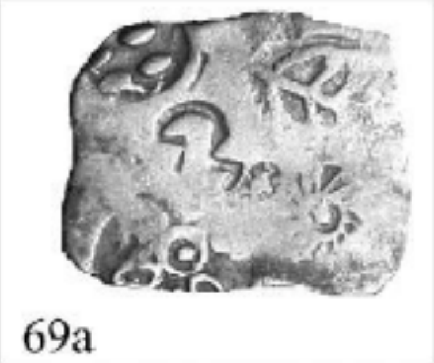
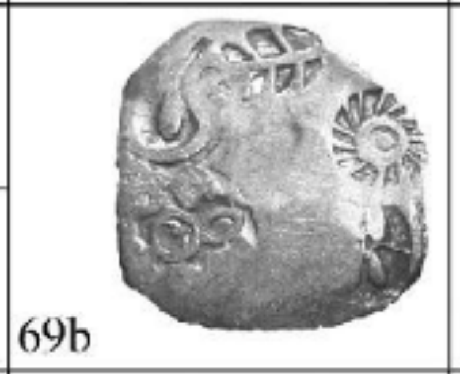
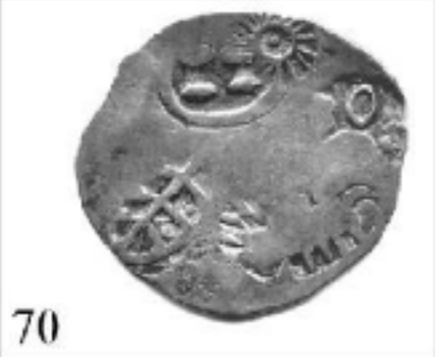
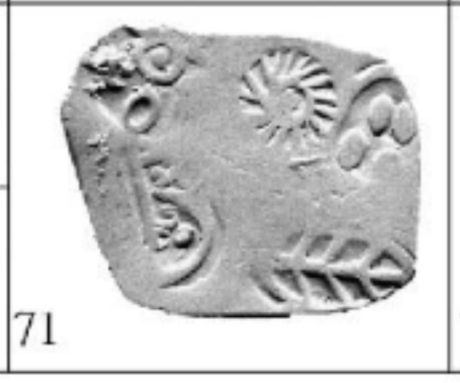
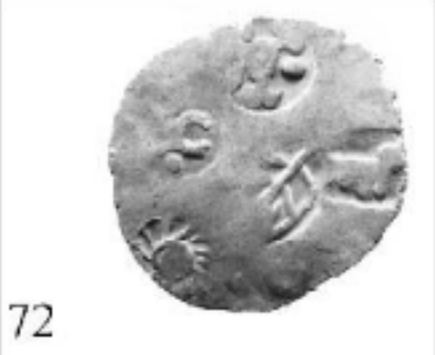
[1] This type may alternatively be the same as 65b with taurine as a bankers' mark

[2] There is a possibility that this type belongs to I VI E and the taurine is a bankers' mark.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 65m | I VII A 4<br>A | | | | | |  65m |  66 |
| 66 | I VII A 28<br>A | | | | | | | |
| 66a | I VII A 30<br>DM | | | | | |  66a |  66b |
| 66b | I VII A 44<br>RT | | | | | [1] | | |
| 66c | I VIII A 1 [2]<br>PT | | | | | |  66c |  66d |
| 66d | I VIII A 4<br>PT | | | | | | | |
| 67 | I VIII A 29<br>A | | | | | |  67 |  68 |
| 68 | I VIII A 30<br>A | | | | | | | |
| 69 | I VIII A 35<br>A | | | | | [3] |  69 |  69a |
| 69a | I VIII A 43<br>PT | | | | | | | |
| 69b | I VIII A 45<br>PT | | | | | |  69b |  70 |
| 70 | I VIII A 46<br>A | | | | | | | |
| 71 | I VIII A 47<br>A | | | | | |  71 |  72 |
| 72 | I VIII B 1<br>A | | | | | | | |

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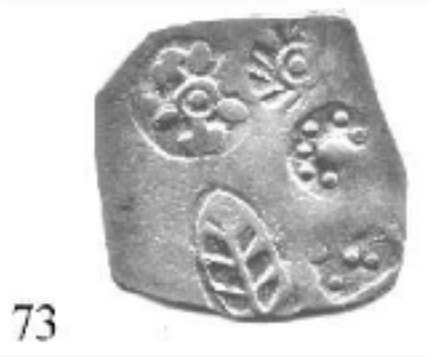
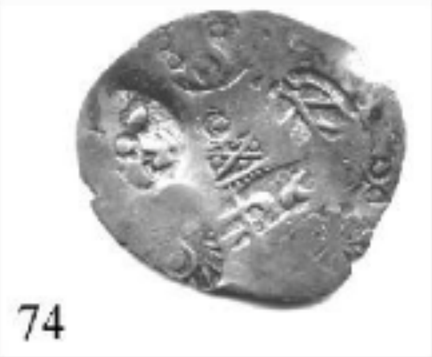
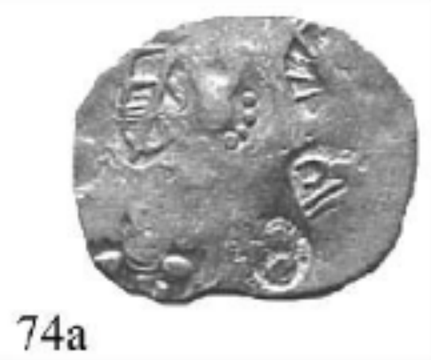
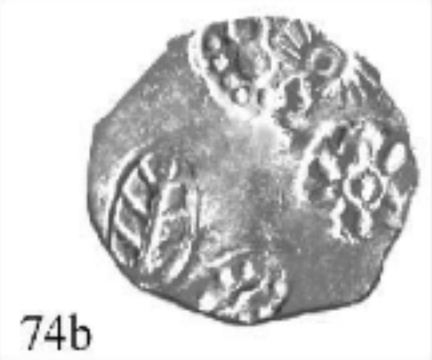
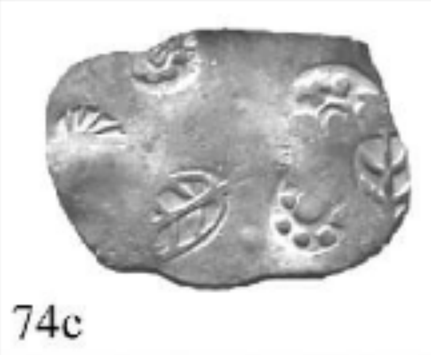
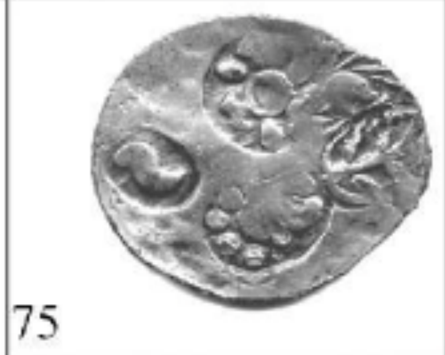
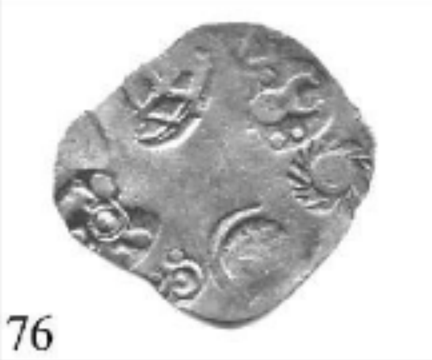
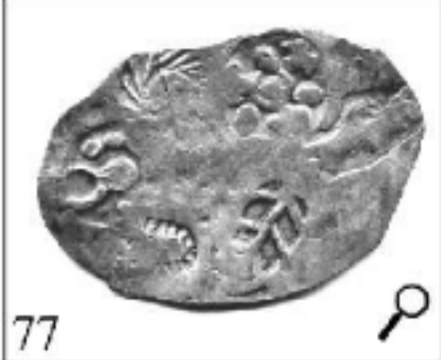
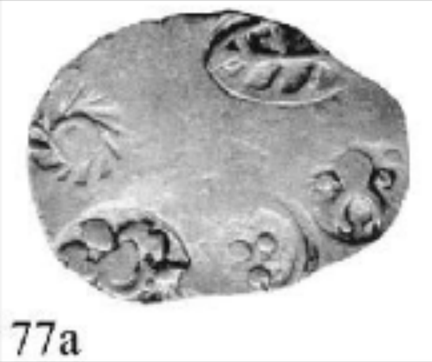
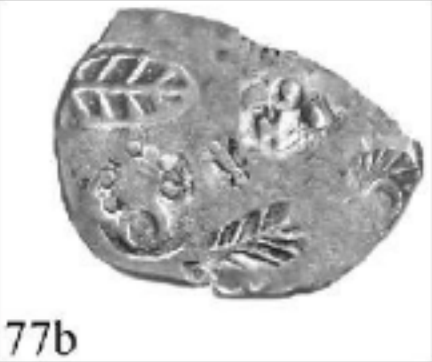
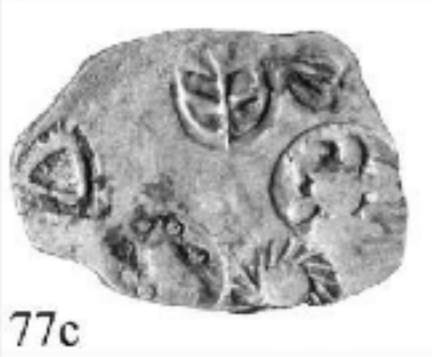
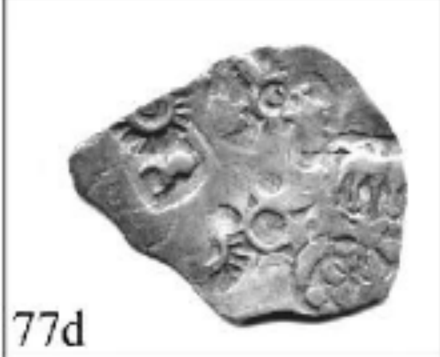
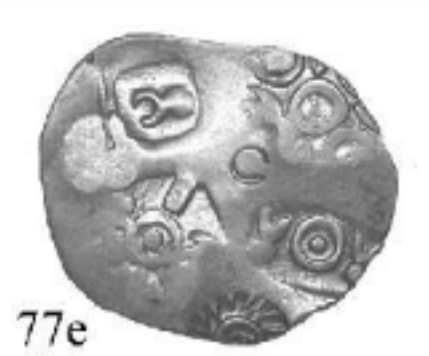
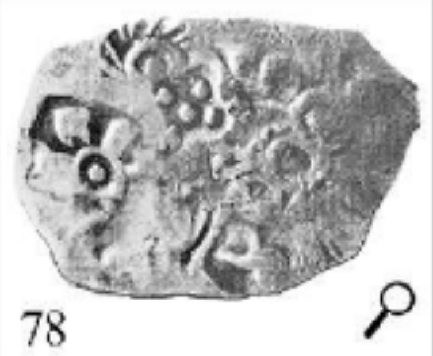
[1] Mark 44 shows two forms, complete and incomplete circle. The incomplete circle may be a mis-strike.

[2] Previously 66a in First Edition [3] This example has no trace of a six-armed symbol but may have the fifth mark twice.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 73 | I VIII B 4<br>A | | | | | |  73 |  74 |
| 74 | I VIII B 28<br>A | | | | | | | |
| 74a | I VIII B 30<br>RT | | | | | |  74a |  74b |
| 74b | I VIII B 33<br>BM | | | | | | | |
| 74c | I VIII B 35<br>RT | | | | | |  74c |  75 |
| 75 | I VIII B 43<br>A | | | | | | | |
| 76 | I VIII B 44<br>A | | | | | |  76 |  77 |
| 77 | I VIII B 46<br>A | | | | | | | |
| 77a | I VIII B 47<br>BM | | | | | |  77a |  77b |
| 77b | I VIII B 52<br>DM | | | | | | | |
| 77c | I VIII B 61<br>DM | | | | | |  77c |  77d |
| 77d | I IX A 1<br>A | | | | | | | |
| 77e | I IX A 2<br>PM | | | | | |  77e |  78 |
| 78 | I IX A 4<br>A | | | | | | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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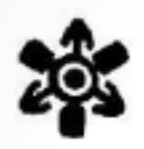
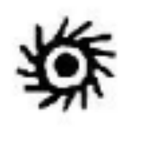
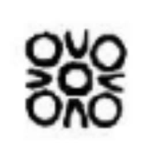
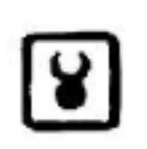
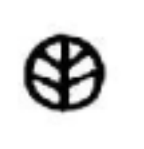
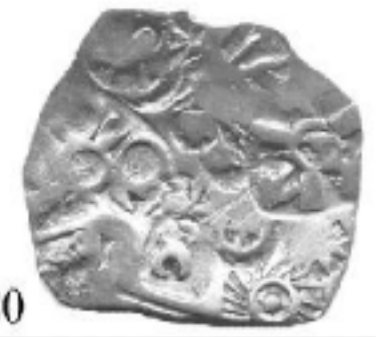
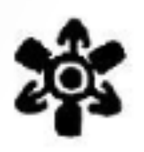
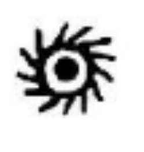
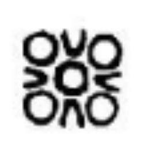
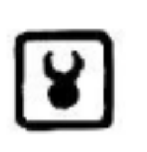
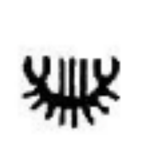
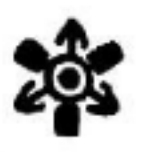
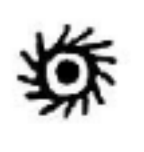
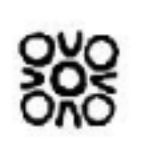
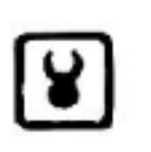
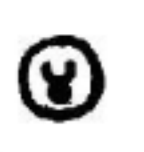
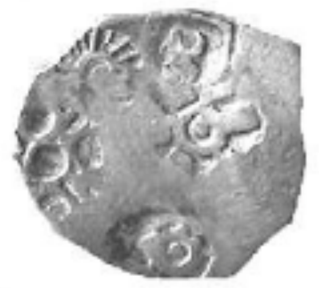
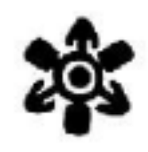
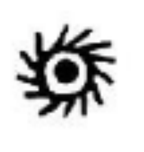
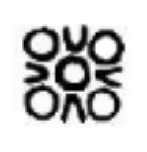
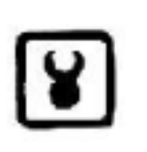
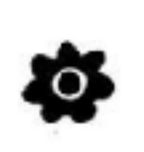
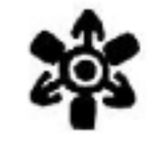
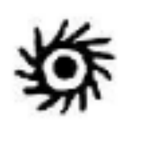
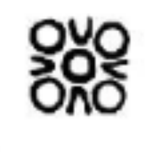
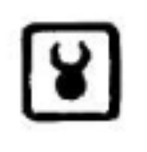
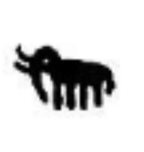
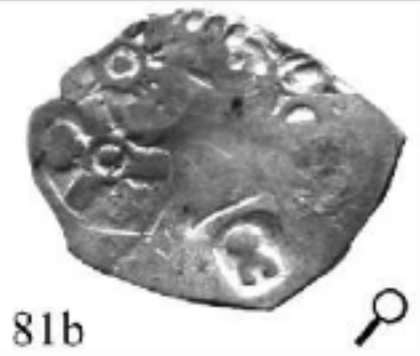
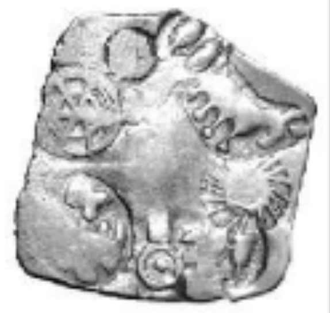
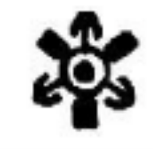
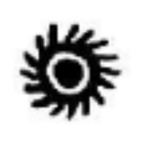
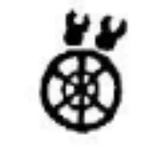
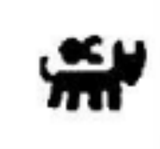
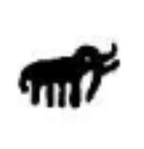
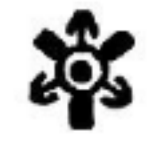
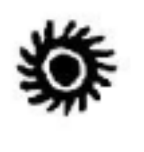
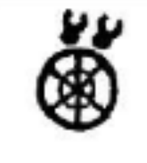
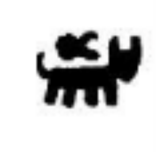
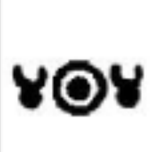
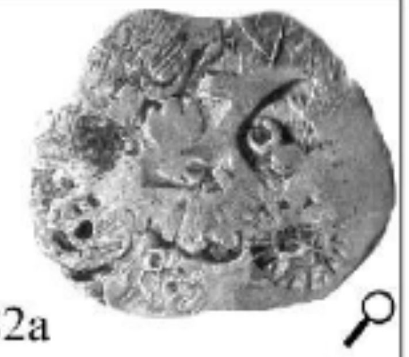
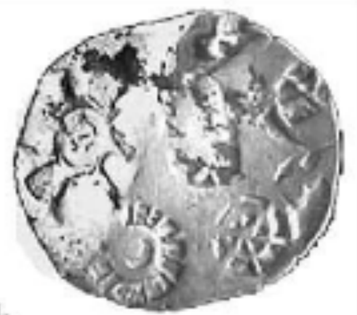
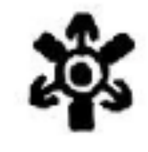
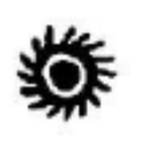
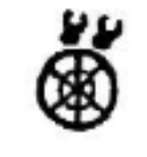
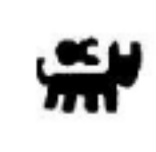
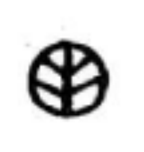
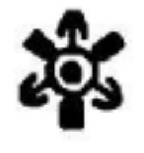
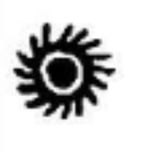
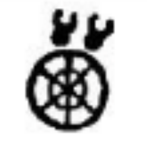
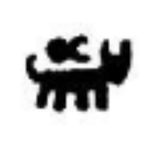
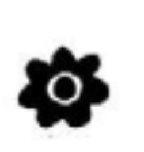
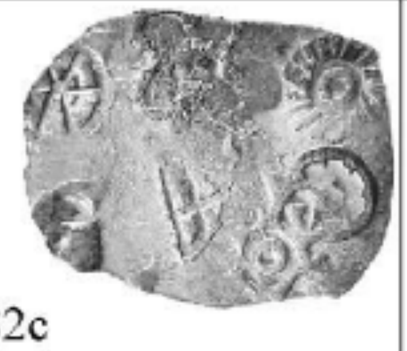
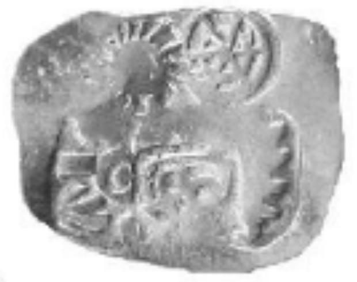
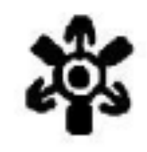
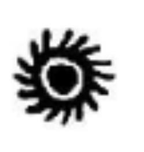
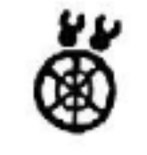
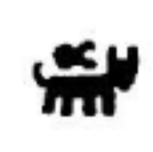
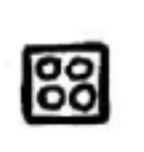
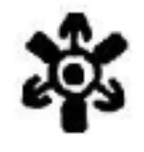
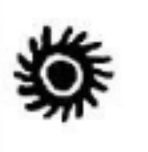
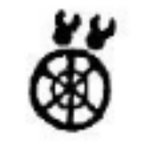
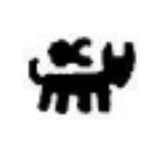
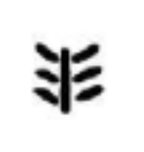
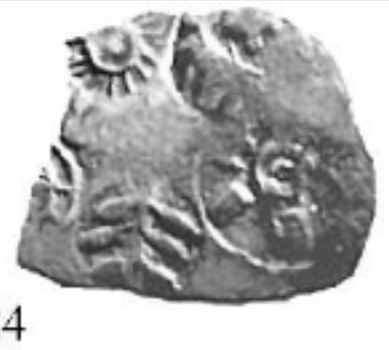
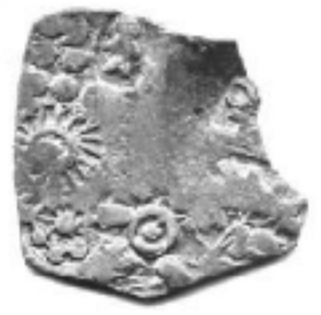
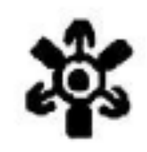
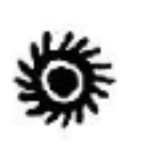
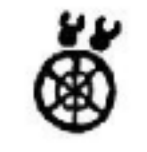
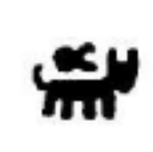
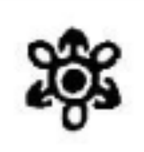
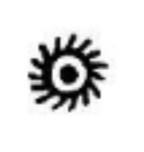
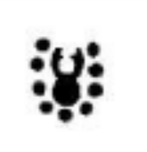
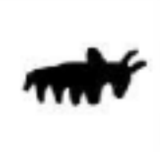
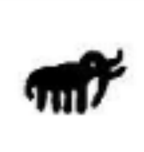
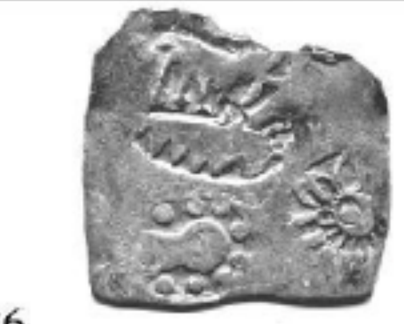
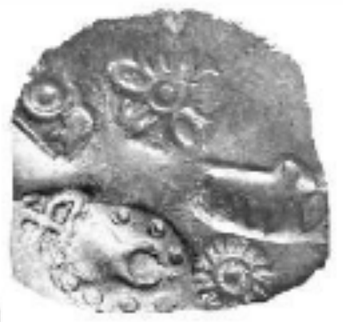
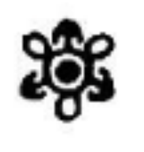
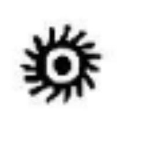
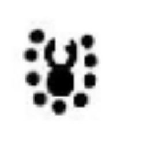
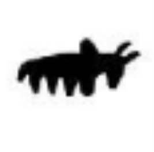
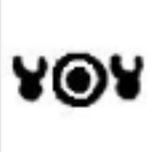
| 79 | I IX A 29<br>PoW |  |  |  |  |  | no image available<br>79 | <br>80 |
| 80 | I IX A 30<br>A |  |  |  |  |  | | |
| 81 | I IX A 34<br>BKB |  |  |  |  |  | no image available<br>81 | <br>81a |
| 81a | I IX A 35<br>SS, PT |  |  |  |  |  | | |
| 81b | I IX A 36<br>PM |  |  |  |  |  | <br>81b | <br>82 |
| 82 | I X A 1<br>Aur, SS |  |  |  |  |  | | |
| 82a | I X A 2<br>SS |  |  |  |  |  | <br>82a | <br>82b |
| 82b | I X A 29<br>SS |  |  |  |  |  | | |
| 82c | I X A 35<br>PT |  |  |  |  |  | <br>82c | <br>83 |
| 83 | I X A 49<br>PoW, SS |  |  |  |  |  | | |
| 84 | I X A 52<br>PoW, BM |  |  |  |  |  | <br>84 | <br>85 |
| 85 | I X A 71<br>A |  |  |  |  | | | |
| 86 | I XI A 1<br>Aur, A |  |  |  |  |  | <br>86 | <br>86a |
| 86a | I XI A 2<br>PT |  |  |  |  |  | | |

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## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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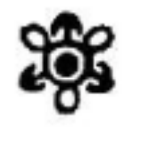
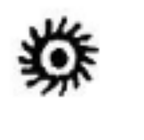
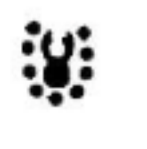
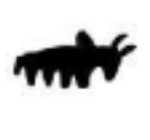
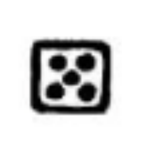
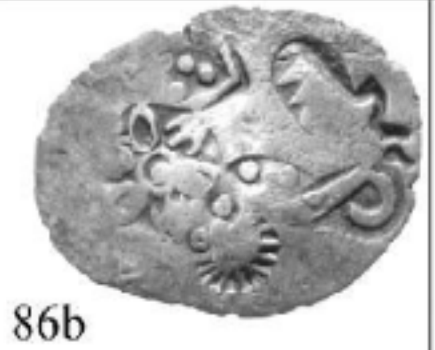
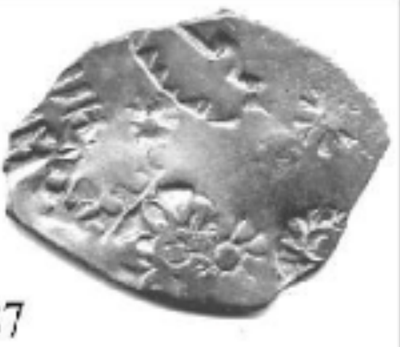
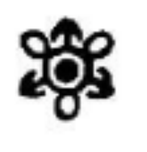
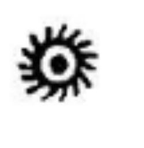
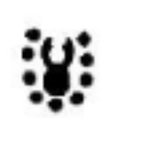
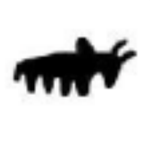
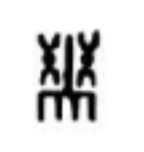
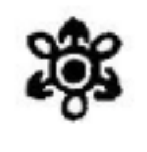
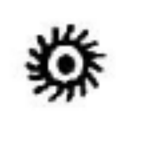
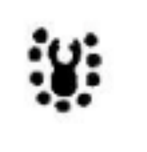
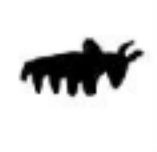
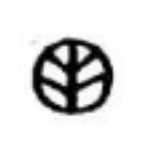
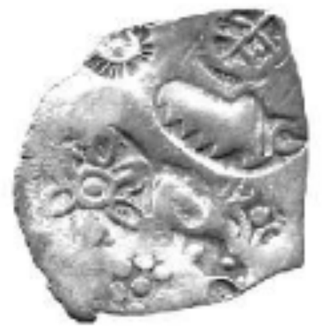
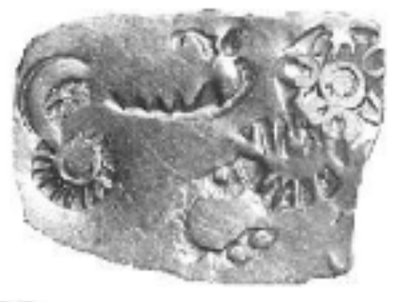
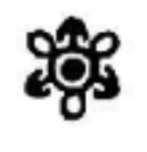
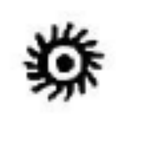
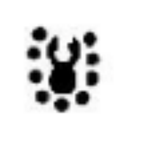
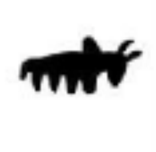
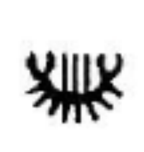
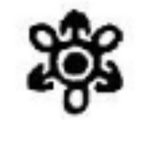
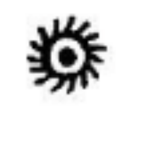
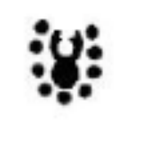
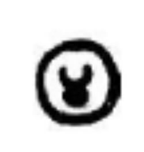
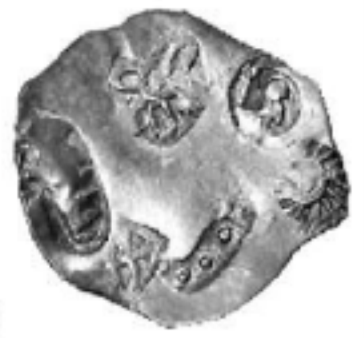
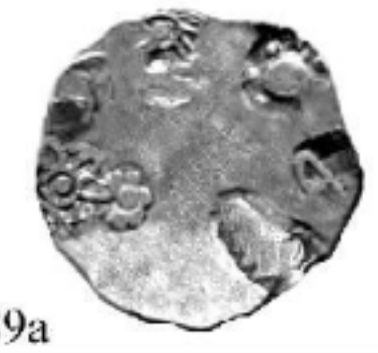
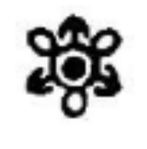
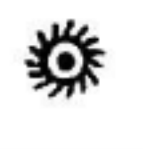
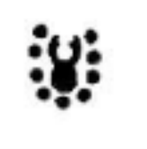
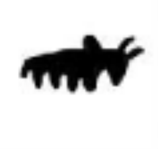
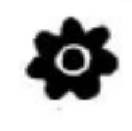
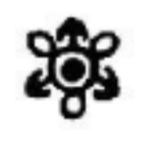
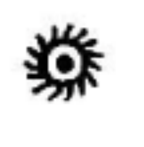
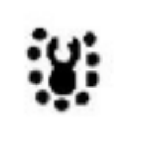
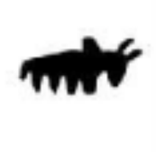
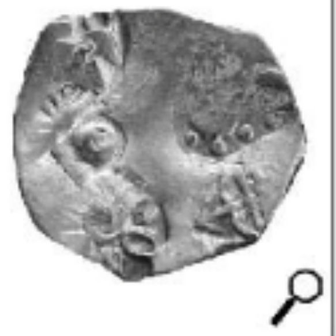
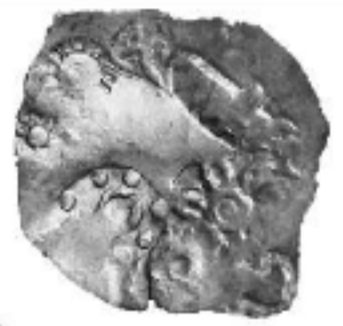
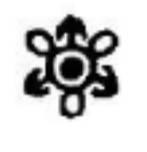
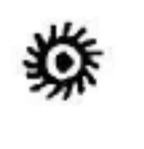
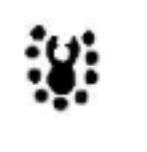
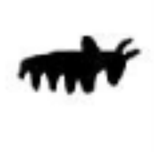
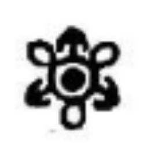
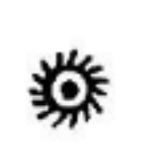
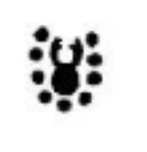
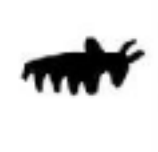
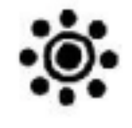
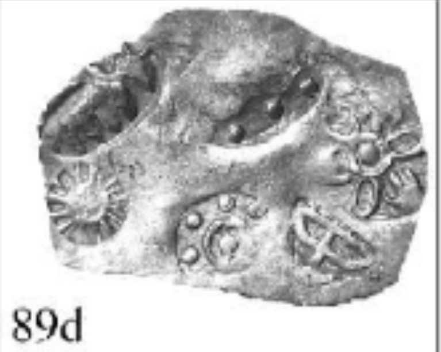
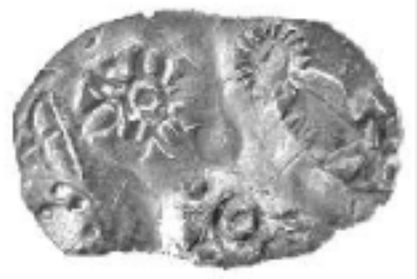
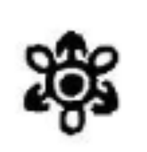
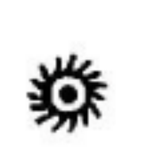
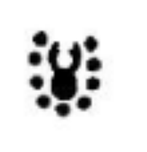
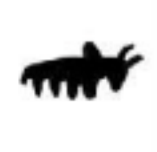
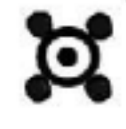
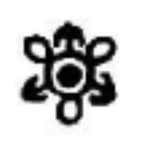
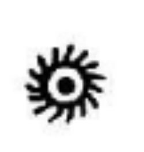
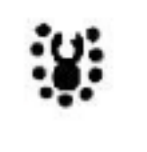
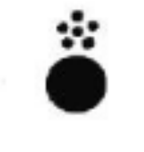
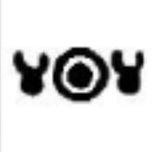
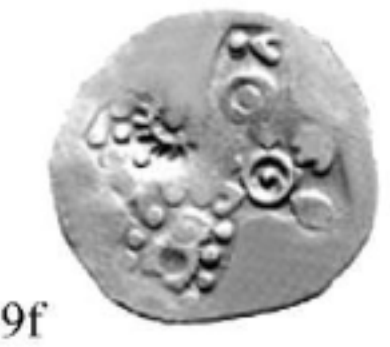
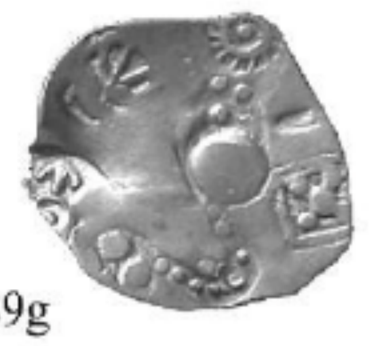
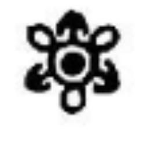
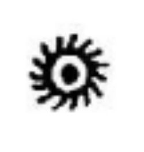
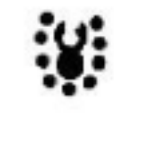
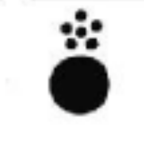
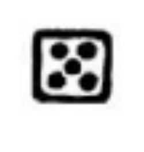
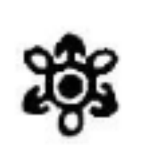
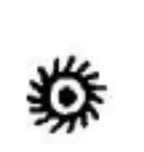
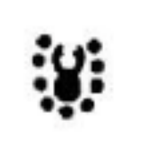
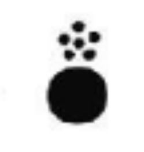
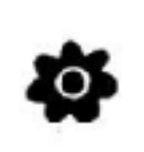
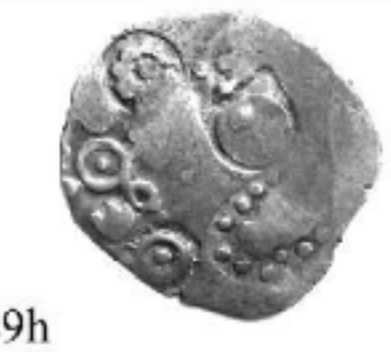
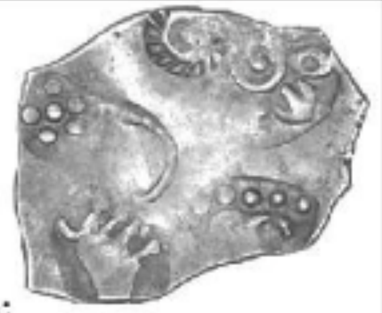
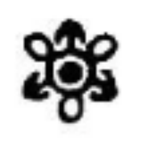
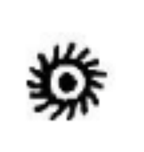
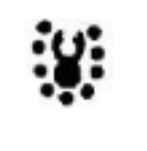
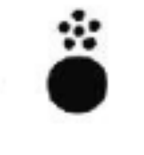
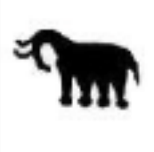
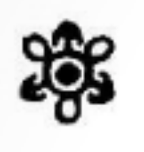
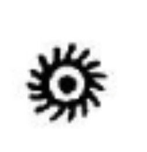
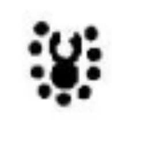
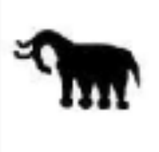
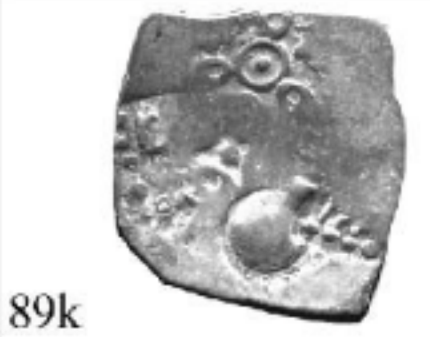
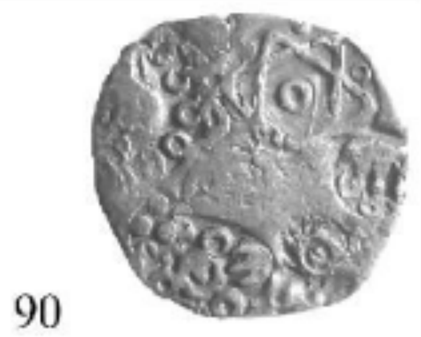
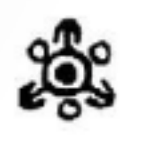
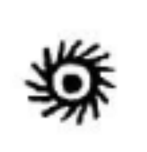
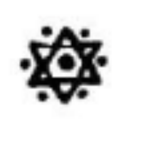
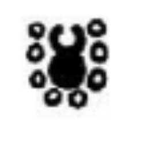
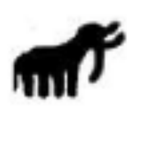
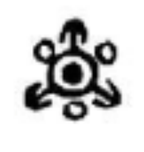
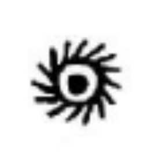
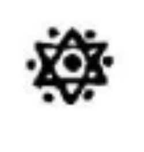
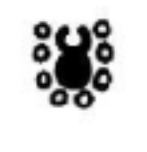
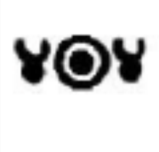
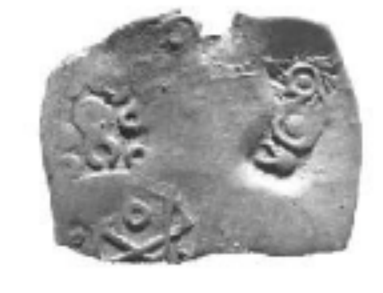
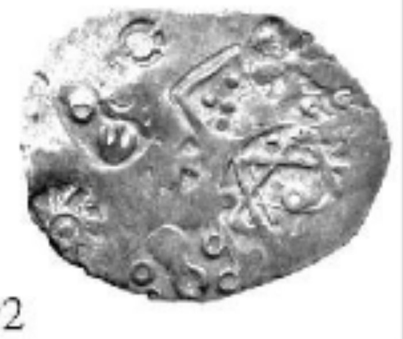
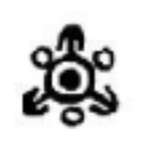
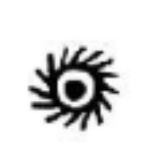
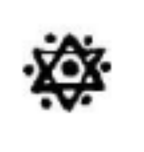
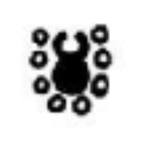
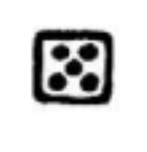
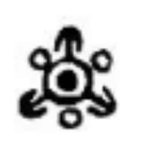
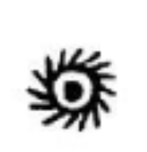
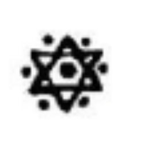
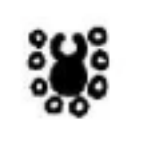
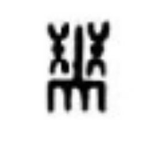
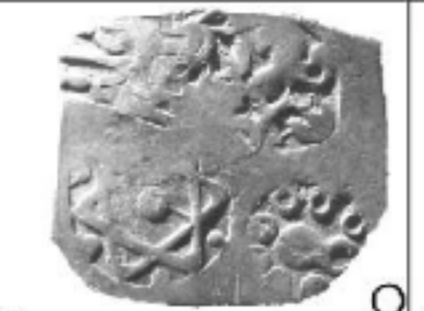
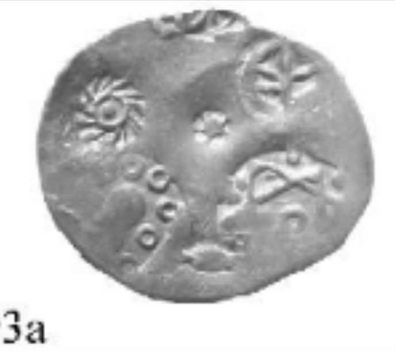
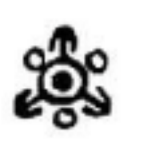
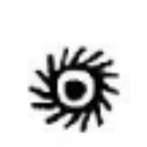
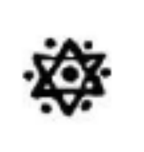
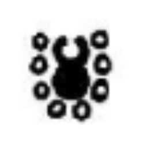
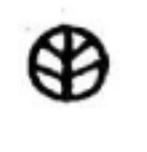
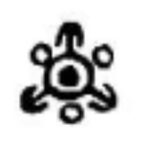
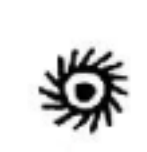
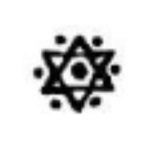
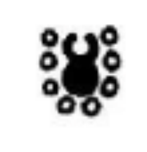
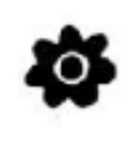
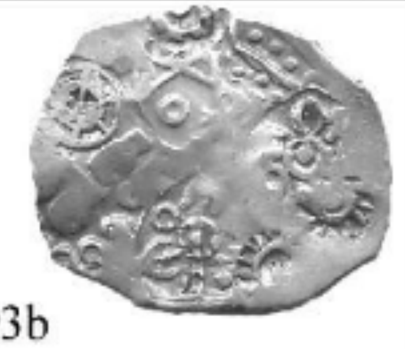
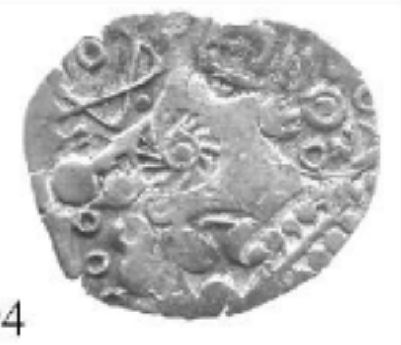
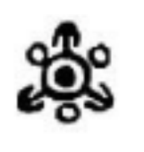
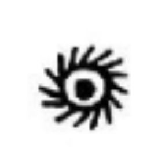
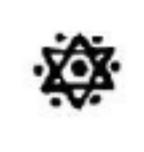
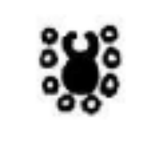
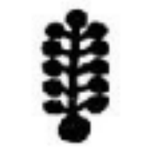
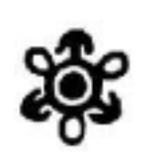
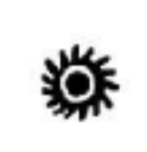
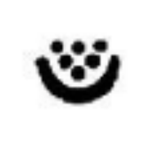
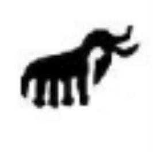
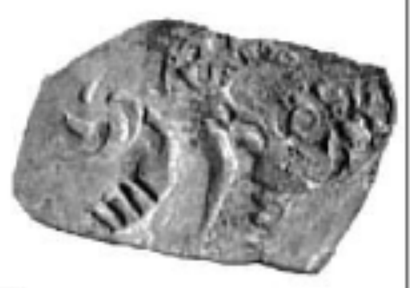
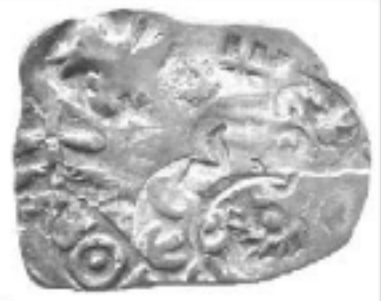
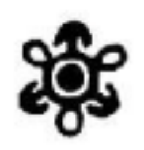
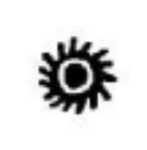
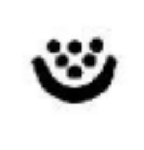
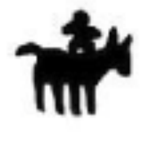
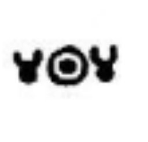
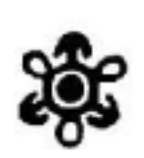
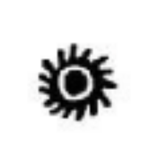
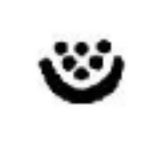
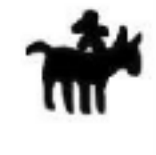
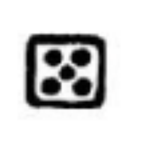
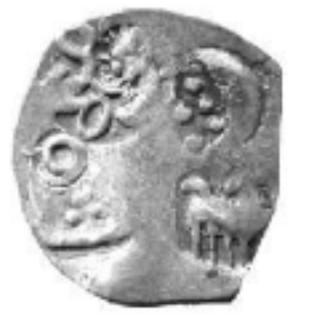
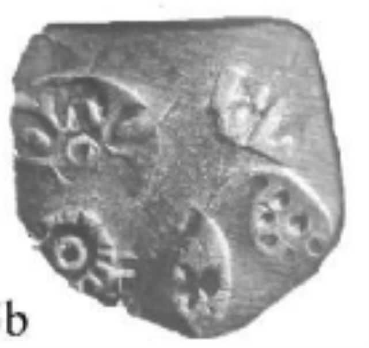
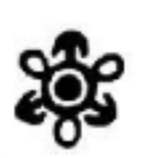
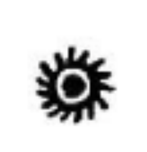
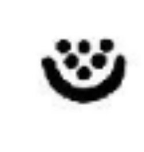
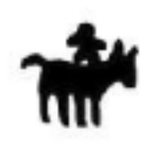
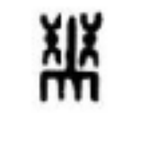
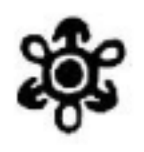
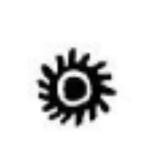
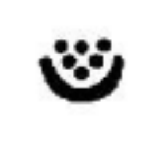
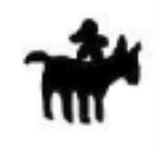
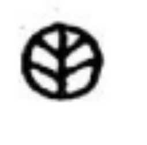
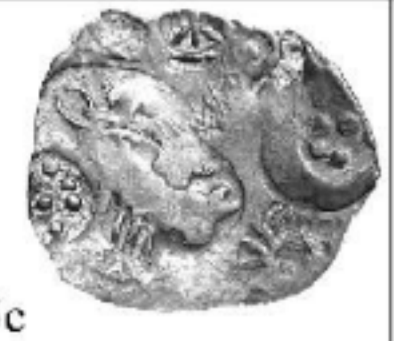
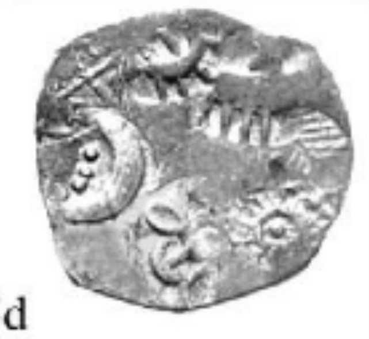
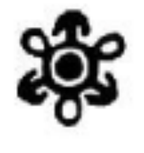
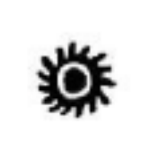
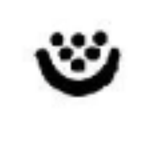
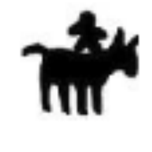
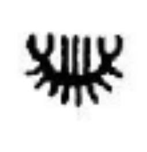
| | | 1 | 2 | 3 | 4 | 5 | | |
| 86b | I XI A 4<br>BM |  |  |  |  |  | <br>86b | <br>87 |
| 87 | I XI A 28<br>A |  |  |  |  |  | | |
| 88 | I XI A 29<br>AF |  |  |  |  |  | <br>88 | <br>88a |
| 88a | I XI A 30<br>PT |  |  |  |  |  | | |
| 89 | I XI A 34<br>Jaun, FT |  |  |  | |  | <br>89 | <br>89a |
| 89a | I XI A 35<br>PT |  |  |  |  | [1]<br> | | |
| 89b | I XI A 42<br>PT |  |  |  |  | [2]<br> | <br>89b | <br>89c |
| 89c | I XI A 43<br>PT |  |  |  |  | | | |
| 89d | I XI A 487<br>PT |  |  |  |  | [3]<br> | <br>89d | <br>89e |
| 89e | I XI A 488<br>PT |  |  |  |  | [3]<br> | | |
| 89f | I XI B 2<br>BM |  |  |  |  |  | <br>89f | <br>89g |
| 89g | I XI B 4<br>SS |  |  |  |  |  | | |
| [4] 89h | I XI B 35<br>RT |  |  |  |  |  | <br>89h | <br>89j |
| [5] 89j | I XI B 36<br>SH |  |  |  |  |  | | |

[1] Varieties of I XI A illustrated that contain bow & arrow are from a hoard with this bankers countermark. It is not an official mark.
[2] This mark is occasionally seen with open squares, see Enlargements section
[3] Varieties of I XI A illustrated that contain bow & arrow are from a hoard with this bankers countermark. It is not an official mark.
[4] Previously 14a in first edition. [5] Previously 14b in first edition.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 89k | I XI C 36<br>BM |  |  |  | |  | <br>89k | <br>90 |
| 90 | I XII A 1<br>A |  |  |  |  |  | | |
| 91 | I XII A 2<br>A |  |  |  |  |  | <br>91 | <br>92 |
| 92 | I XII A 4<br>Aur, AF |  |  |  |  |  | | |
| 93 | I XII A 28<br>A |  |  |  |  |  | <br>93 | <br>93a |
| 93a | I XII A 29<br>A |  |  |  |  |  | | |
| 93b | I XII A 35<br>A |  |  |  |  |  [1] | <br>93b | <br>94 |
| 94 | I XII A 72<br>A |  |  |  |  |  | | |
| 94a | I XIII A 1<br>A |  |  |  | |  | <br>94a | <br>95 |
| 95 | I XIII A 2<br>A |  |  |  |  |  | | |
| 95a | I XIII A 4<br>A |  |  |  |  |  | <br>95a | <br>95b |
| 95b | I XIII A 28<br>A, LD |  |  |  |  |  | | |
| 95c | I XIII A 29<br>A |  |  |  |  |  | <br>95c | <br>95d |
| 95d | I XIII A 30<br>MM 2928 |  |  |  |  |  | | |

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[1] Coin also has mark 33 (snake)

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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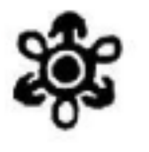
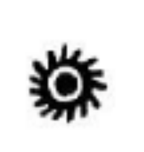
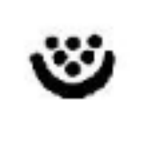
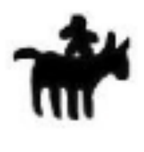
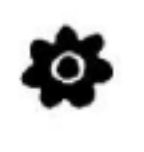
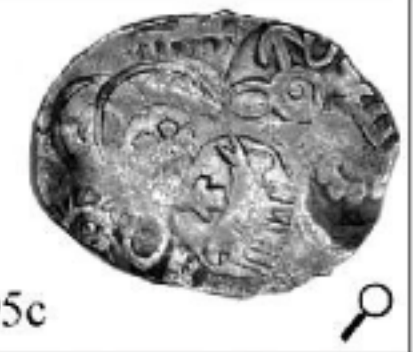
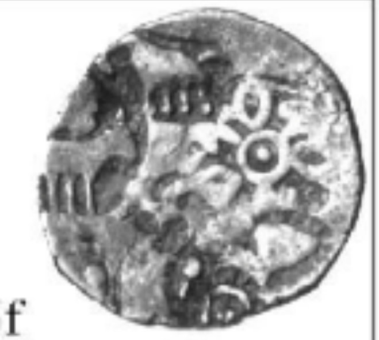
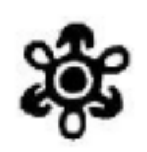
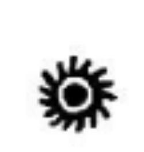
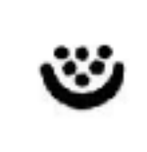
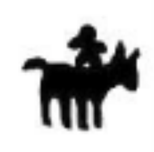
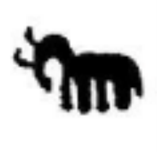
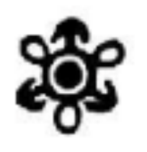
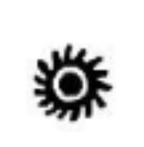
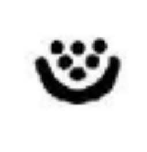
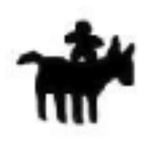
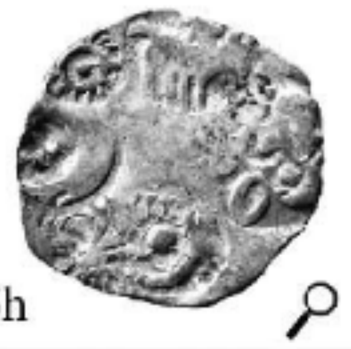
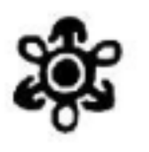
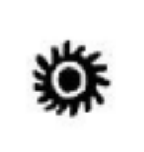
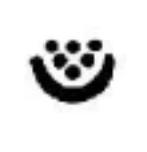
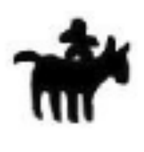
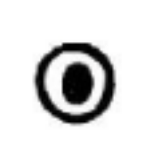
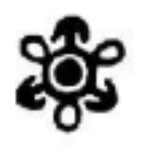
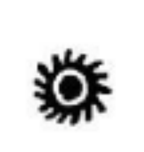
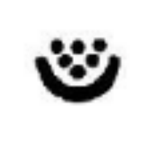
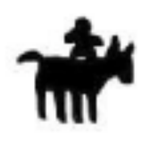
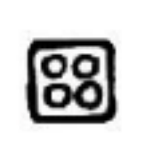
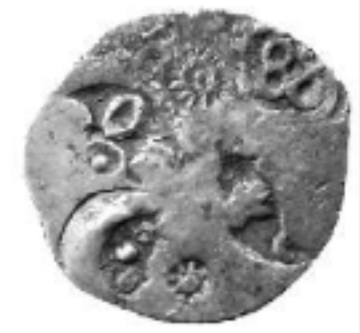
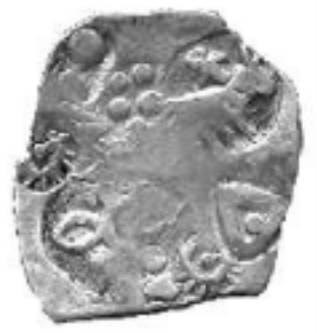
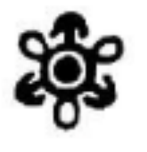
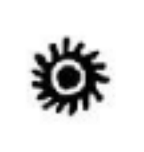
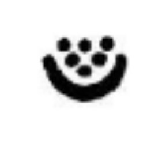
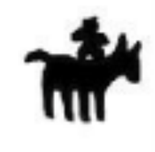
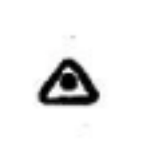
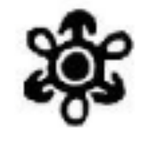
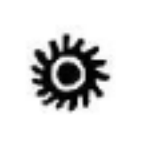
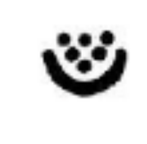
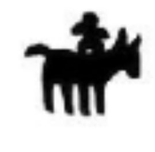
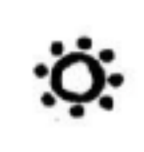
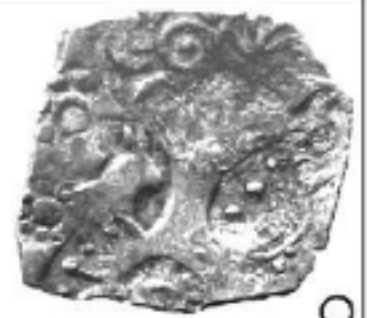
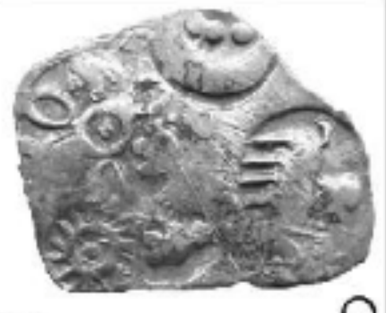
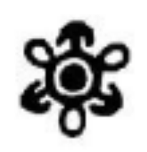
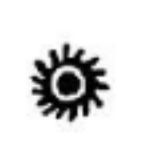
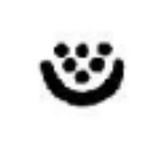
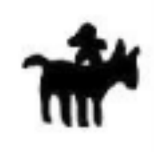
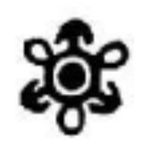
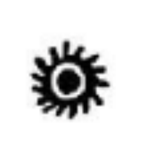
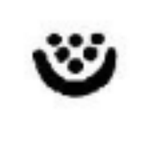
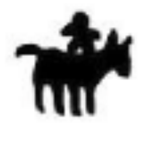
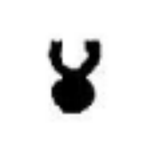
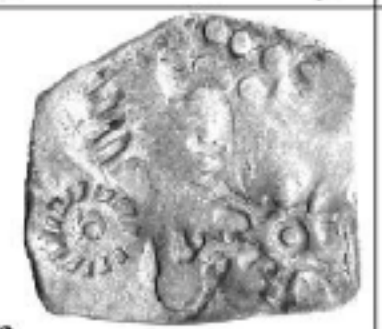
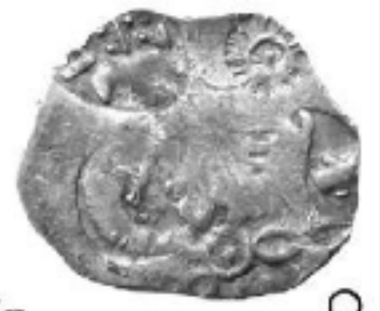
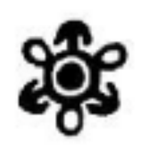
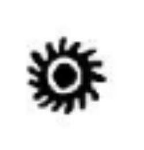
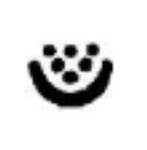
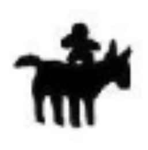
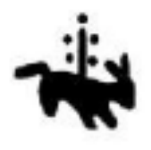
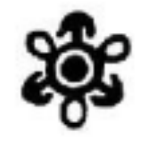
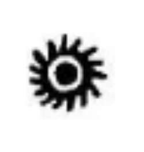
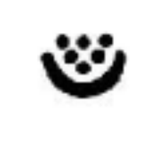
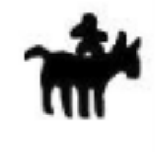
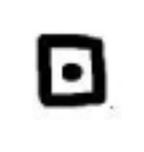
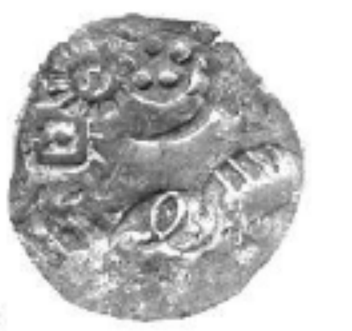
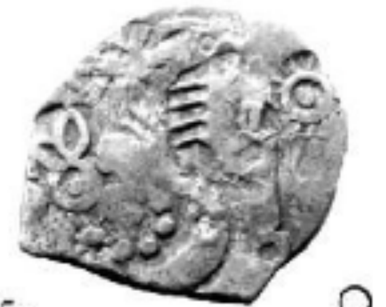
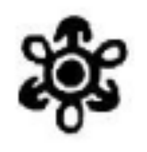
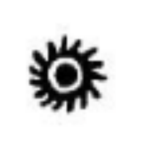
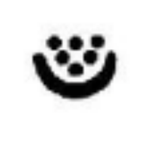
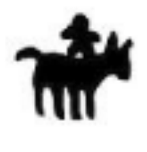
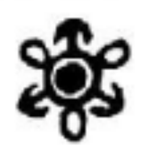
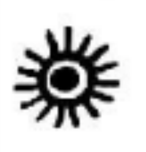
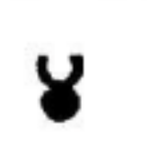
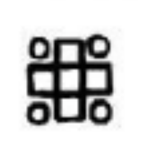
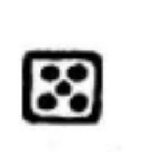
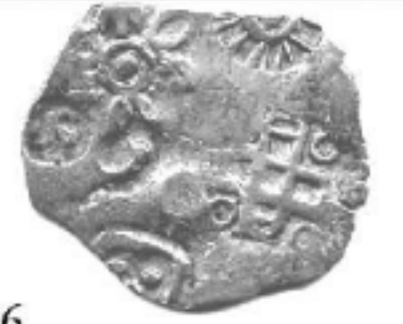
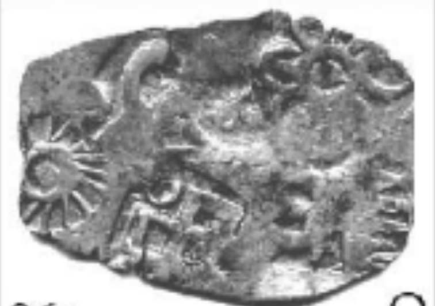
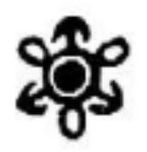
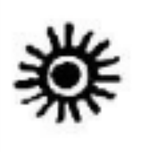
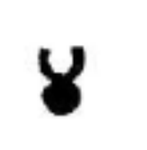
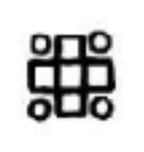
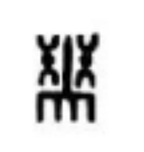
| | | 1 | 2 | 3 | 4 | 5 | | |
| 95e | I XIII A 35<br>RT |  |  |  |  |  | <br>95e | <br>95f |
| 95f | I XIII A 36<br>A |  |  |  |  |  | | |
| 95g | I XIII A 43<br>Trade |  |  |  |  | | no image available<br>95g | <br>95h |
| 95h | I XIII A 45<br>A |  |  |  |  |  | | |
| 95j | I XIII A 49<br>A |  |  |  |  |  | <br>95j | <br>95k |
| 95k | I XIII A 54<br>SS |  |  |  |  |  | | |
| 95L | I XIII A 59<br>BM |  |  |  |  |  | <br>95L | <br>95m |
| 95m | I XIII A 71<br>A |  |  |  |  | | | |
| 95n | I XIII A 167<br>A |  |  |  |  |  | <br>95n | <br>95p |
| 95p | I XIII A 492<br>A |  |  |  |  |  | | |
| 95q | I XIII A 623<br>Fitz |  |  |  |  |  | <br>95q | <br>95r |
| 95r | I XIII A ?<br>A |  |  |  |  | ? [1] | | |
| 96 | I XIV A 4<br>A |  |  |  |  |  | <br>96 | <br>96a |
| 96a | I XIV A 28<br>A |  |  |  |  |  | | |

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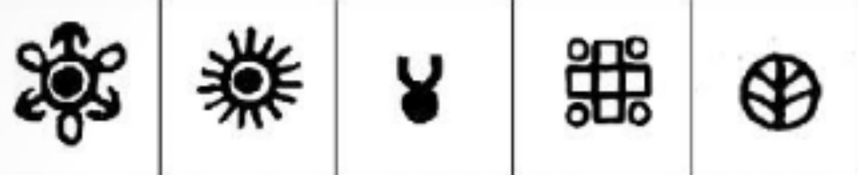
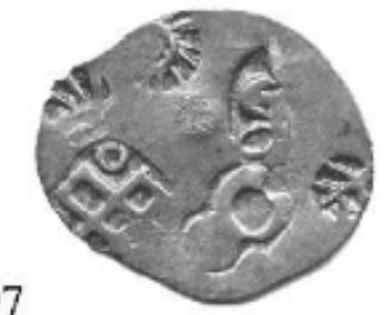
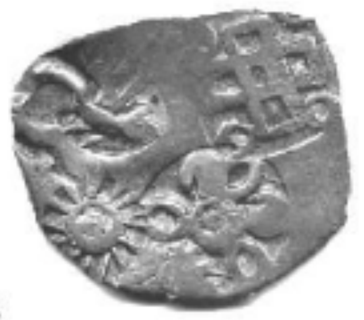
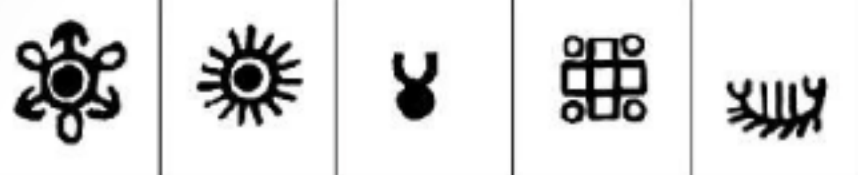
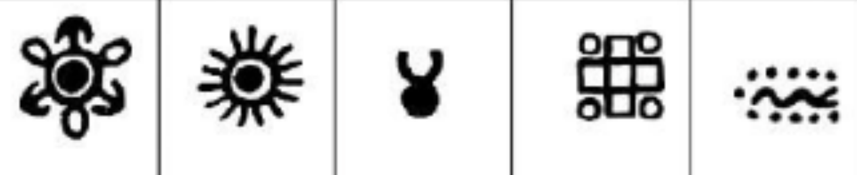
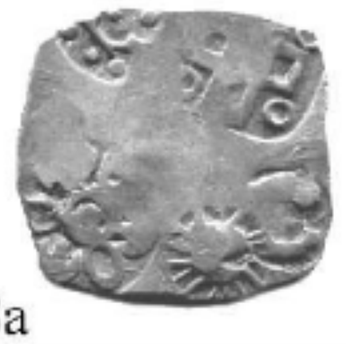
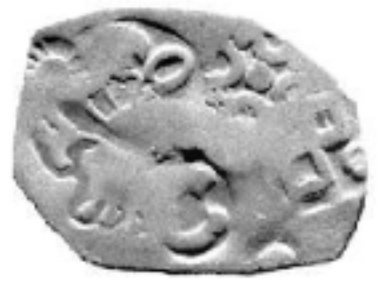
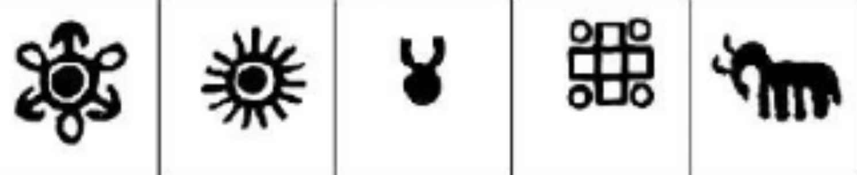
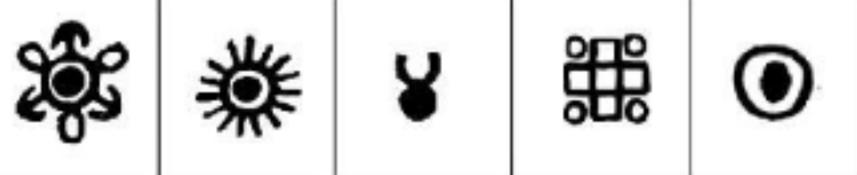
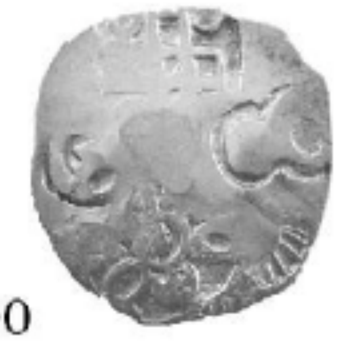
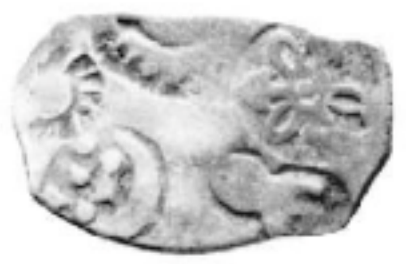
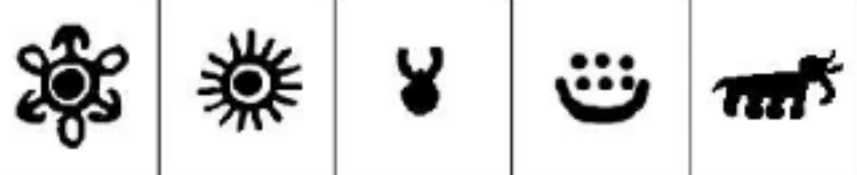
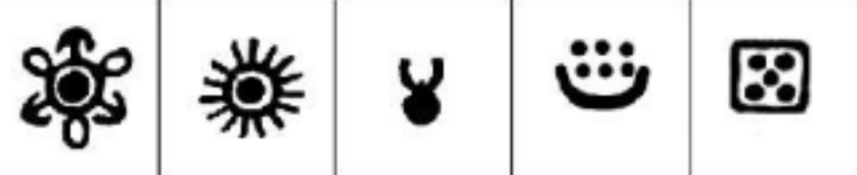
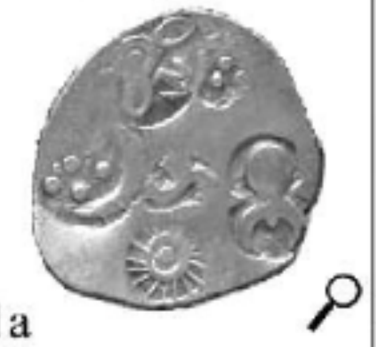
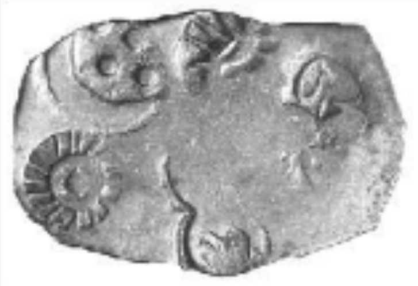
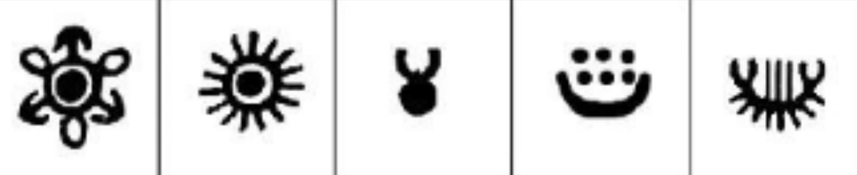
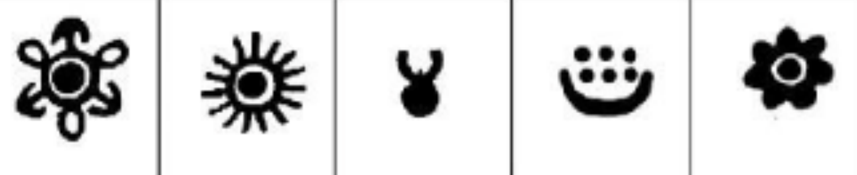
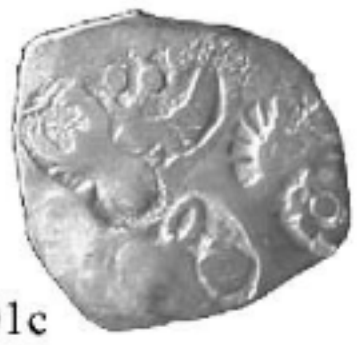
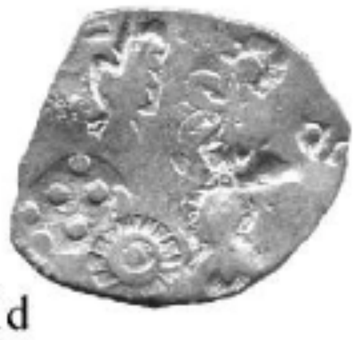
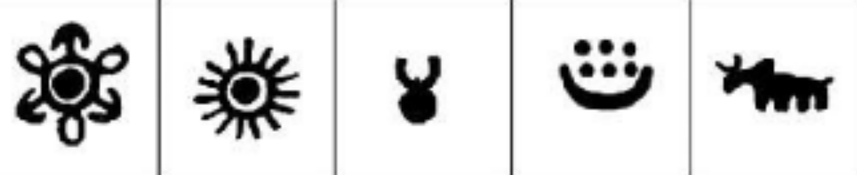
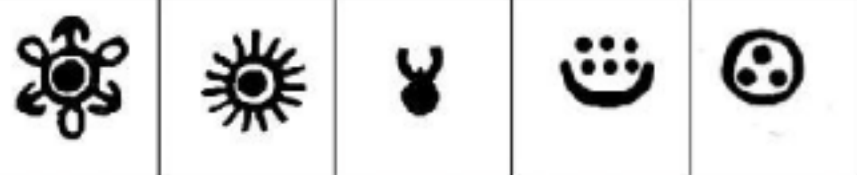
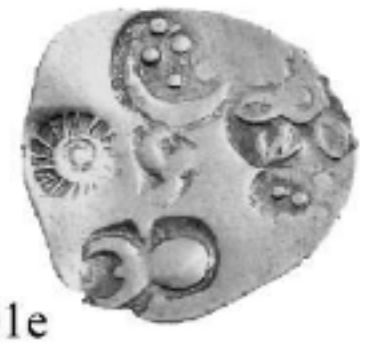
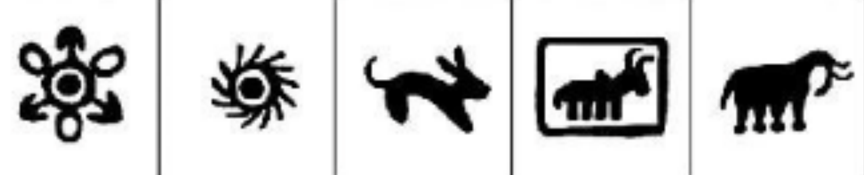
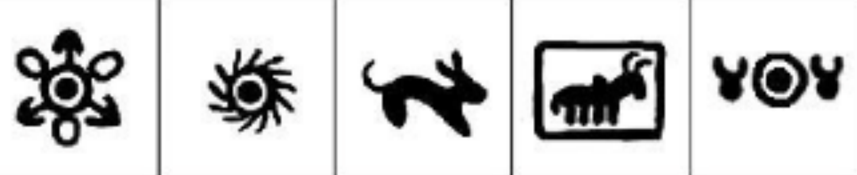
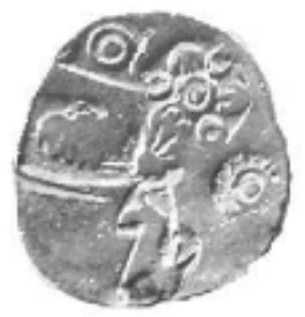
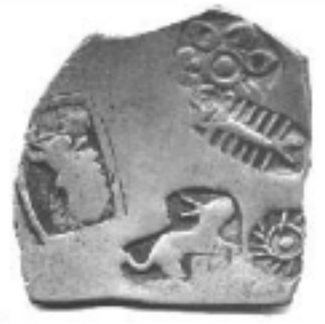
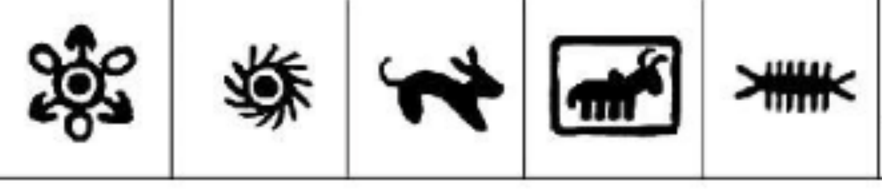
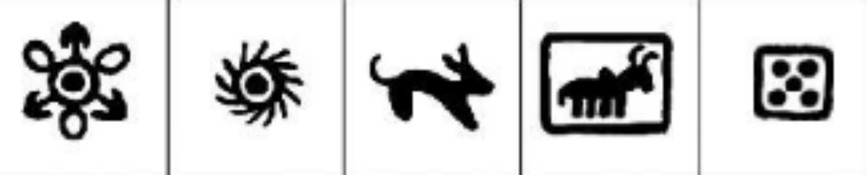
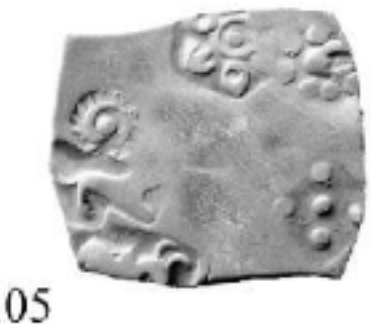
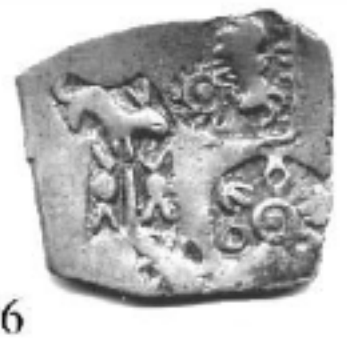
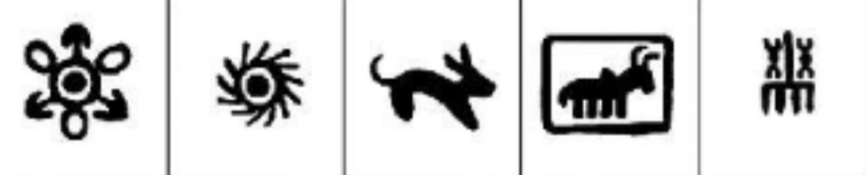
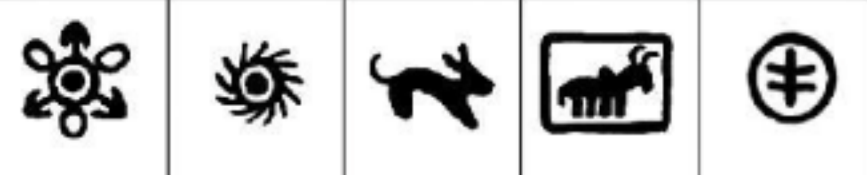
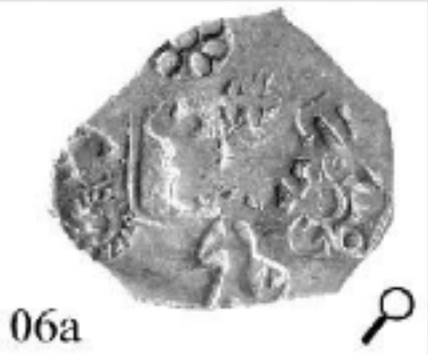
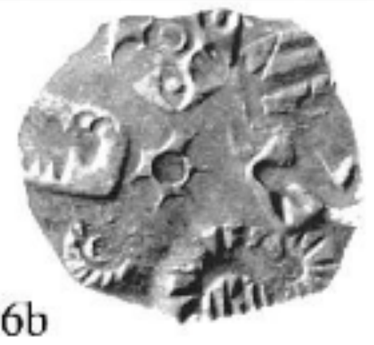
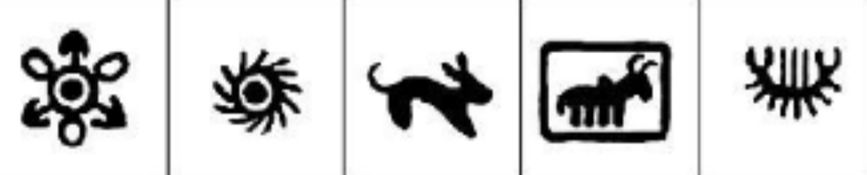
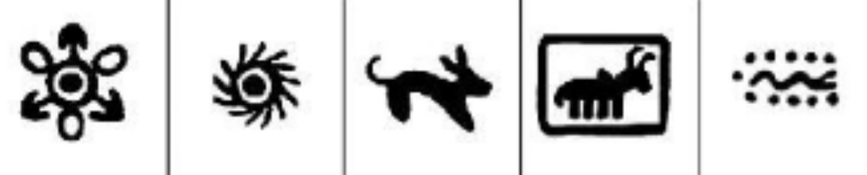
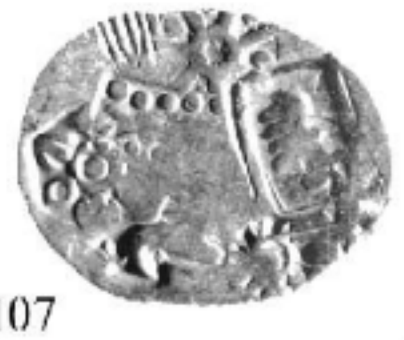
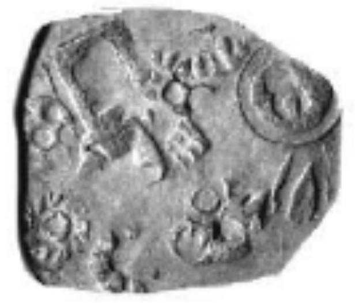
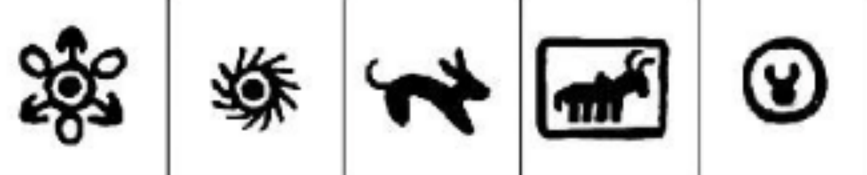
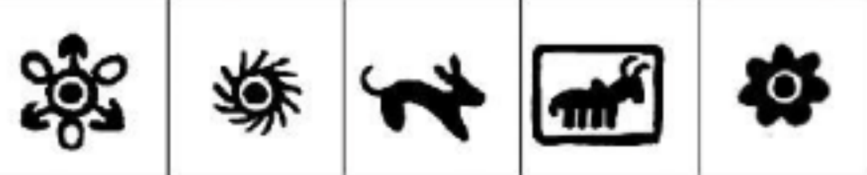
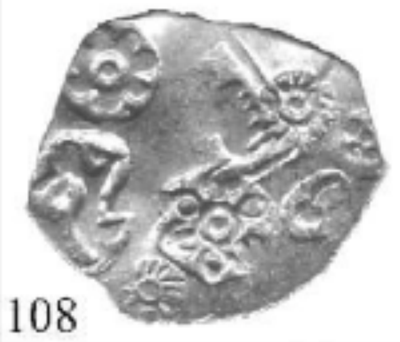
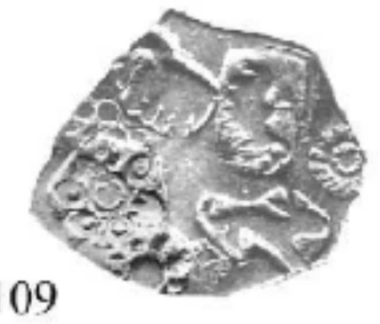
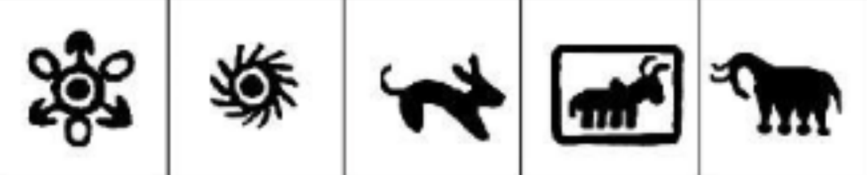
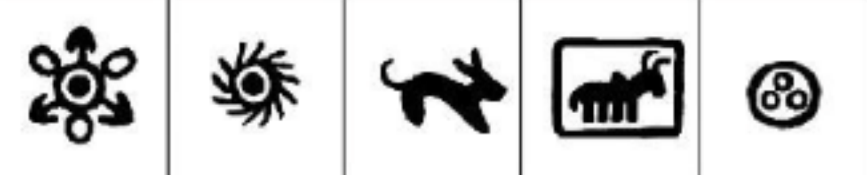
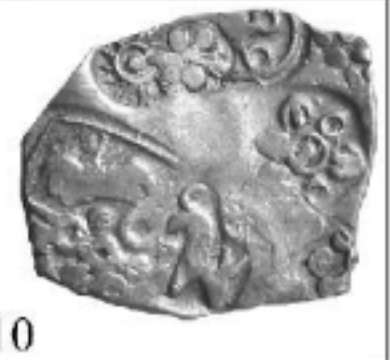
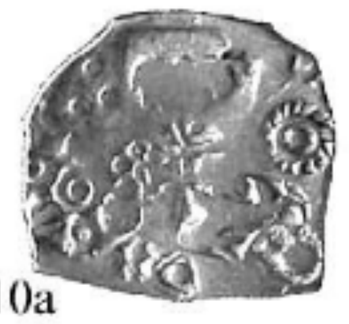
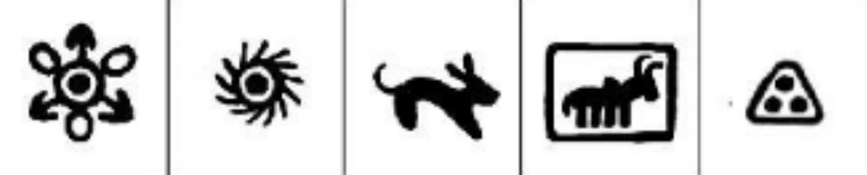
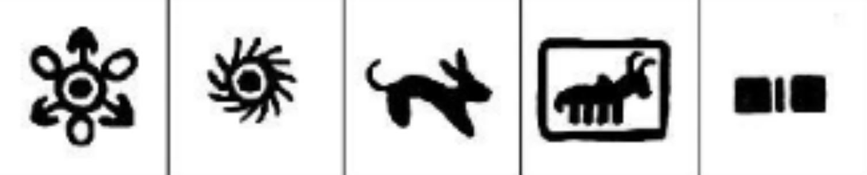
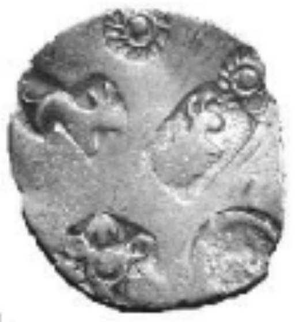
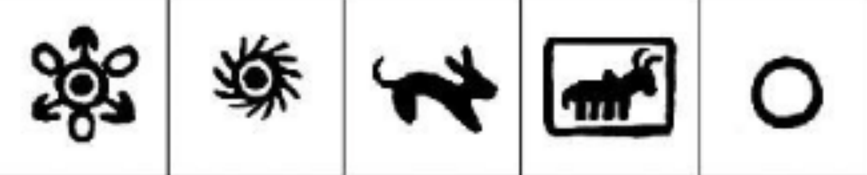
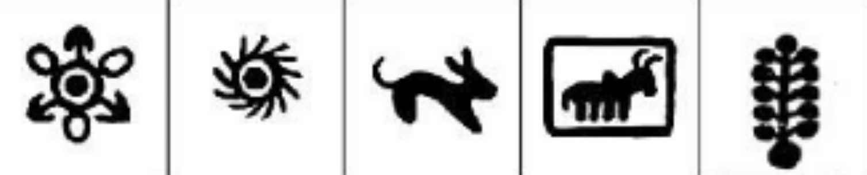
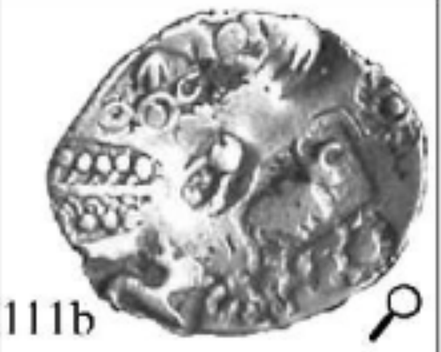
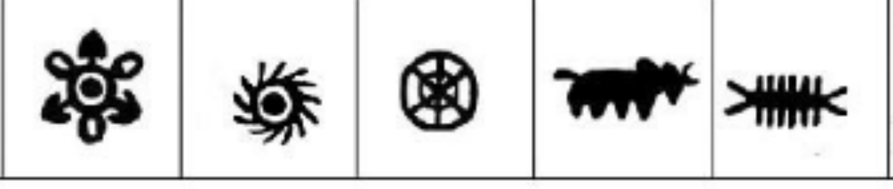
[1] Class I XIII ('donkey rider') coins are poorly executed and often restruck. They also contain bankers marks which makes it difficult to know whether any of this class are true four-mark coins.

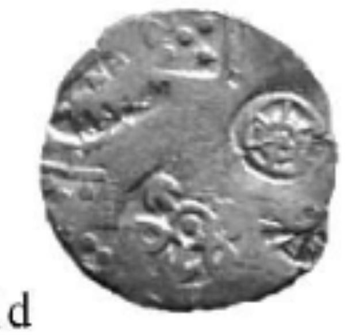
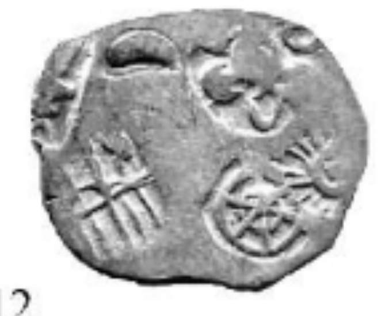
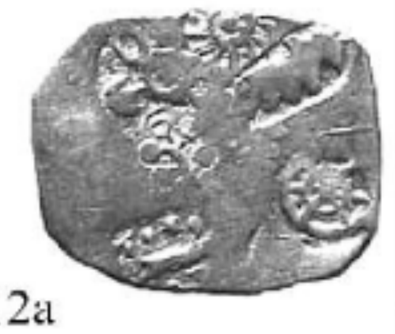
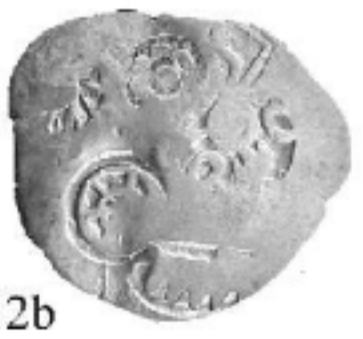
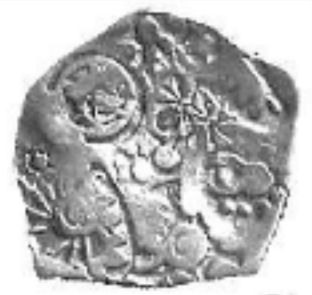
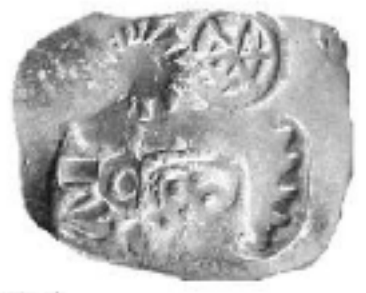
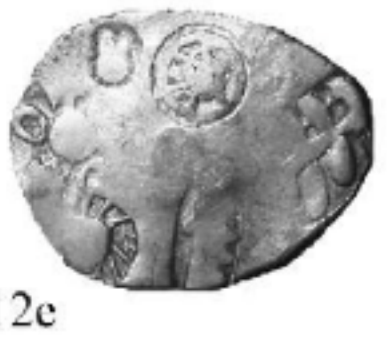
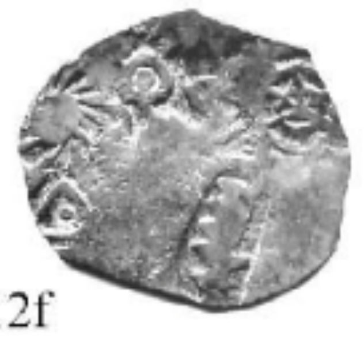
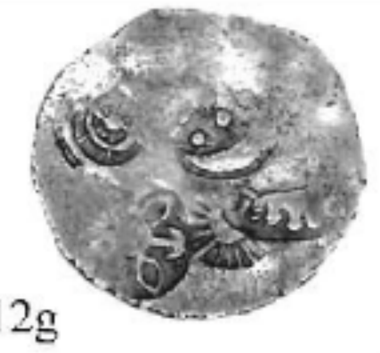
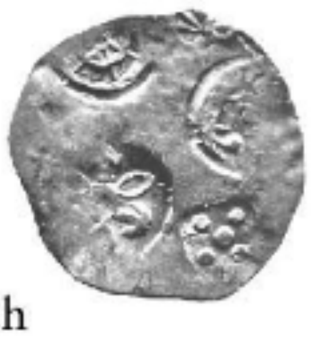
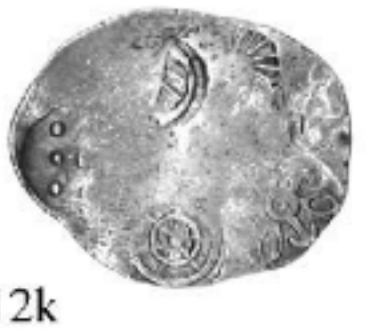
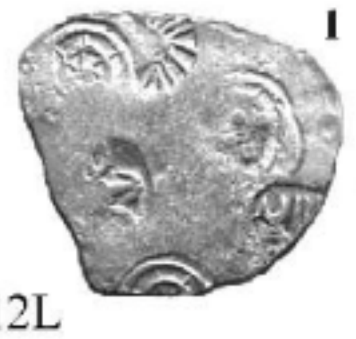
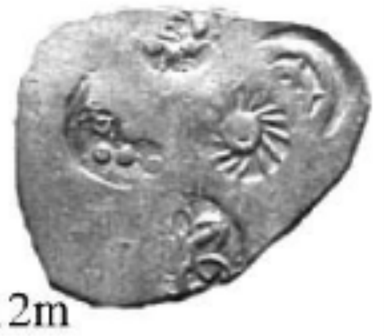
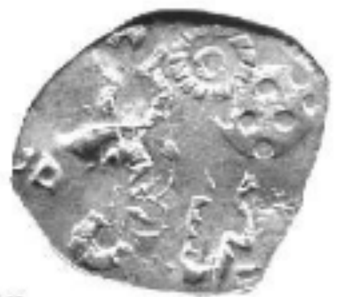
## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 97 | I XIV A 29<br>A |  | | | | |  97 |  98 |
| 98 | I XIV A 32<br>A |  | | | | | | |
| 98a | I XIV A 33<br>A |  | | | | |  98a |  99 |
| 99 | I XIV A 36<br>A |  | | | | | | |
| 100 | I XIV A 45<br>Aur, PoW, PT |  | | | | |  100 |  101 |
| 101 | I XIV B 1<br>A |  | | | | | | |
| 101a | I XIV B 4<br>A |  | | | | |  101a |  101b |
| 101b | I XIV B 30<br>PT |  | | | | | | |
| 101c | I XIV B 35<br>SS |  | | | | |  101c |  101d |
| 101d | I XIV B 46<br>PM |  | | | | | | |
| 101e | I XIV B 47<br>SS |  | | | | |  101e | no image available<br>102 |
| 102 | I XV A 1<br>Jaun |  | | | | | | |
| 103 | I XV A 2<br>Jaun, Aur, BKB, SH |  | | | | |  103 |  104 |
| 104 | I XV A 3<br>Aur, A |  | | | | | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 105 | I XV A 4<br>Aur, A |  | | | | |  105 |  106 |
| 106 | I XV A 28<br>A |  | | | | | | |
| 106a | I XV A 29a<br>Fitz |  | | | | |  106a |  106b |
| 106b | I XV A 30<br>BM |  | | | | | | |
| 107 | I XV A 33<br>Aur, BM |  | | | | |  107 |  107a |
| 107a | I XV A 34<br>A |  | | | | | | |
| 108 | I XV A 35<br>A |  | | | | |  108 |  109 |
| 109 | I XV A 36<br>Aur, SS |  | | | | | | |
| 110 | I XV A 37<br>Aur, A |  | | | | |  110 |  110a |
| 110a | I XV A 40<br>SS |  | | | | | | |
| 111 | I XV A 42<br>Aur |  | | | | | no image available<br>111 |  111a |
| 111a | I XV A 44<br>PT |  | | | | | | |
| 111b | I XV A 72<br>SS |  | | | | |  111b | no image available<br>111c |
| 111c | I XVI A 3<br>SS |  | | | | | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 111d | I XVI A 4<br>RT | ✺ | ☀ | ⊛ | 🐛 | ⚃ |  111d |  112 |
| 112 | I XVI A 28<br>PoW, A | ✺ | ☀ | ⊛ | 🐛 | 卌 | | |
| 112a | I XVI A 33<br>SS | ✺ | ☀ | ⊛ | 🐛 | ≈ |  112a |  112b |
| 112b | I XVI A 35<br>RT | ✺ | ☀ | ⊛ | 🐛 | ✿ | | |
| 112c | I XVI A 36<br>SS | ✺ | ☀ | ⊛ | 🐛 | 🐕 |  112c |  112d |
| 112d | I XVI A 49<br>PT | ✺ | ☀ | ⊛ | 🐛 | ▣ | | |
| 112e | I XVI A 52<br>PT | ✺ | ☀ | ⊛ | 🐛 | ⚘ |  112e |  112f |
| 112f | I XVI A 54<br>A | ✺ | ☀ | ⊛ | 🐛 | ◬ | | |
| 112g | I XVI B 1<br>A | ✺ | ☀ | ⊛ | ⁖◡ | 🐘 |  112g |  112h |
| 112h | I XVI B 4<br>A | ✺ | ☀ | ⊛ | ⁖◡ | ⚃ | | |
| 112k | I XVI B 29<br>Fitz | ✺ | ☀ | ⊛ | ⁖◡ | ⊕ |  112k |  112L[1] |
| 112L | I XVI B 30<br>RT | ✺ | ☀ | ⊛ | ⁖◡ | Ш | | |
| 112m | I XVI B 35<br>RT | ✺ | ☀ | ⊛ | ⁖◡ | ✿ |  112m |  112n |
| 112n | I XVI B 167<br>A | ✺ | ☀ | ⊛ | ⁖◡ | ♉ | | |

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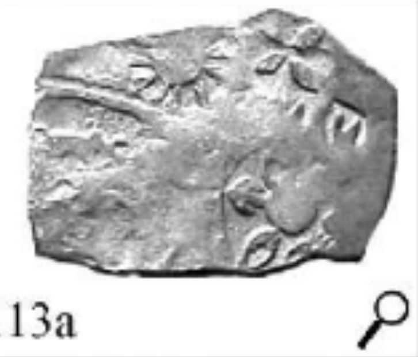
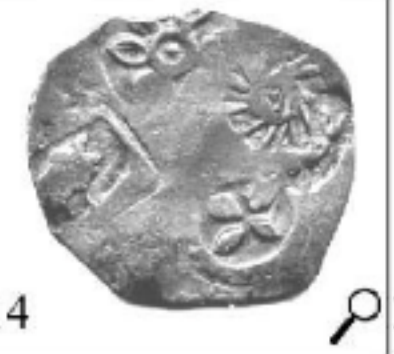
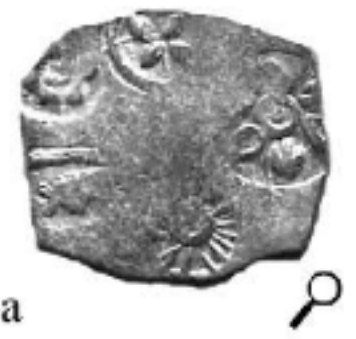
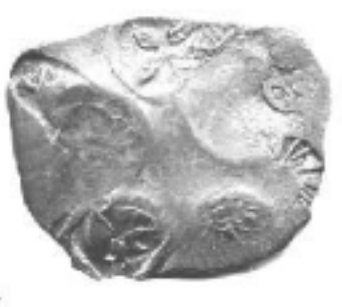
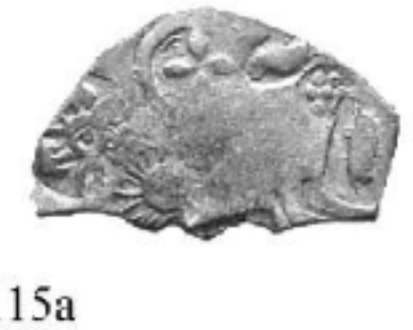
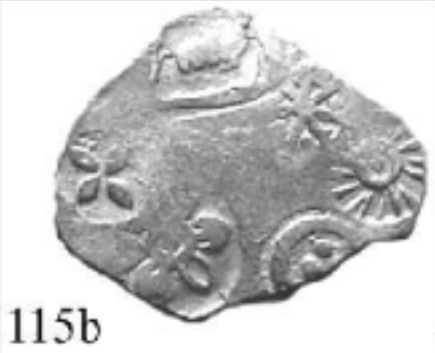
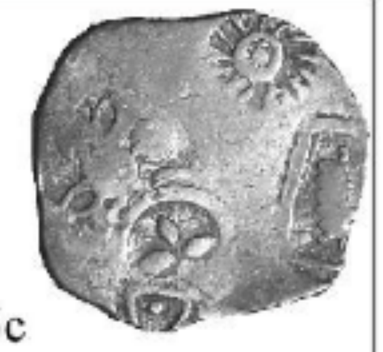
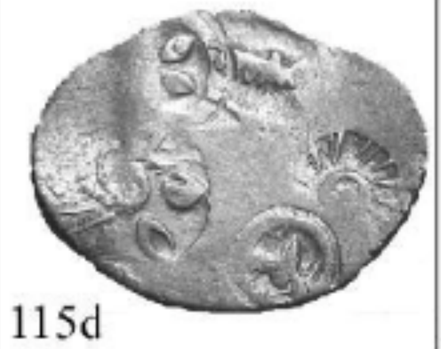
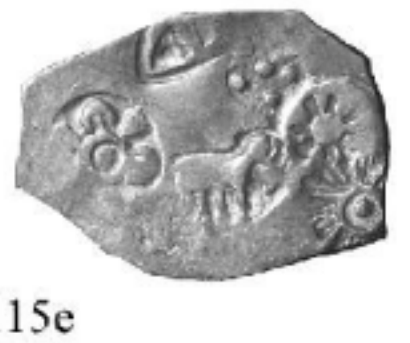
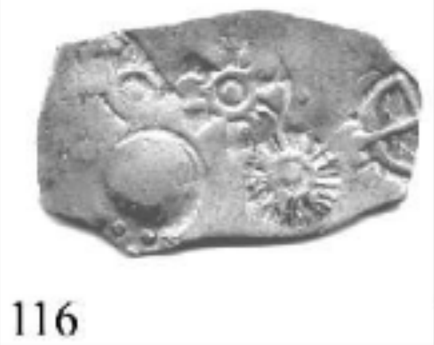
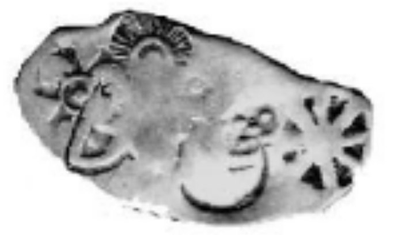
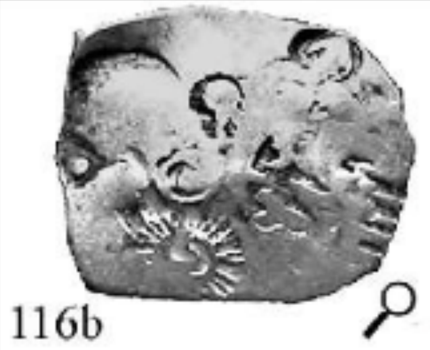
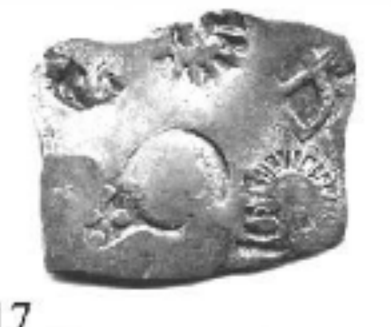
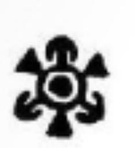
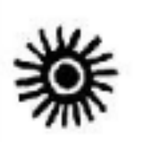
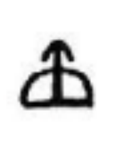
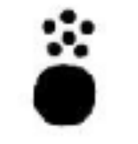
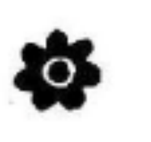
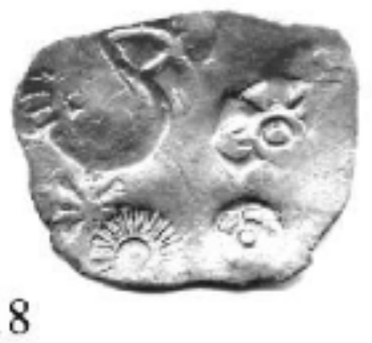
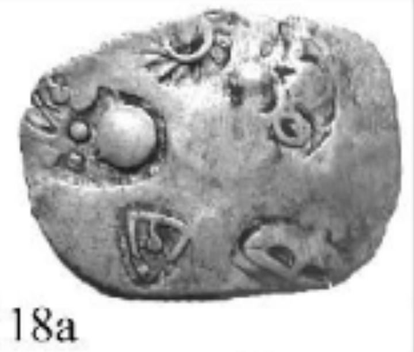
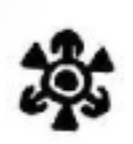
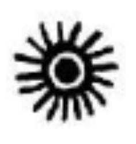
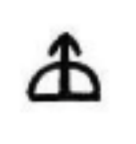
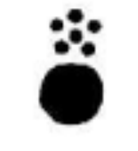
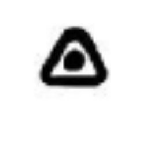
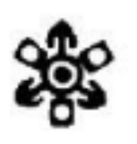
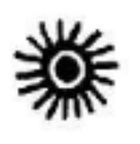
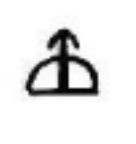
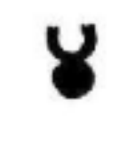
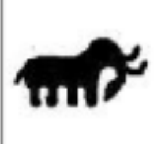
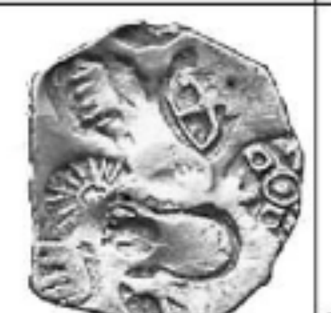
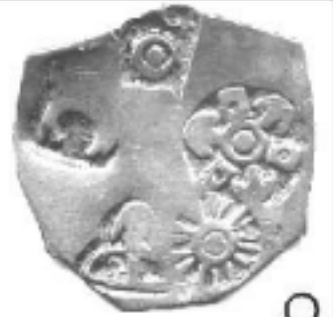
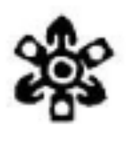
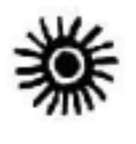
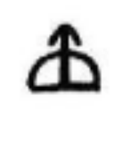
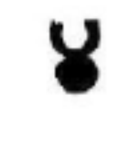
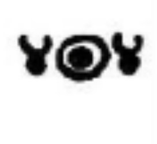
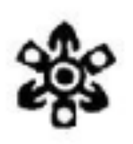
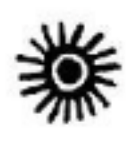
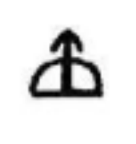
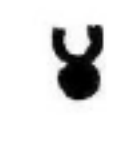
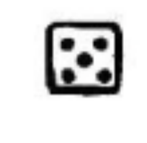
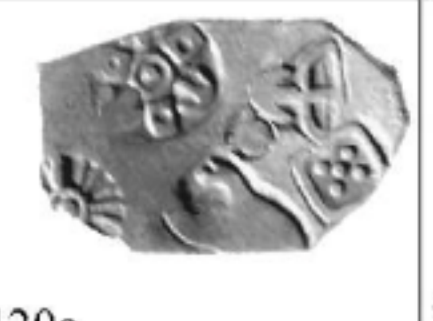
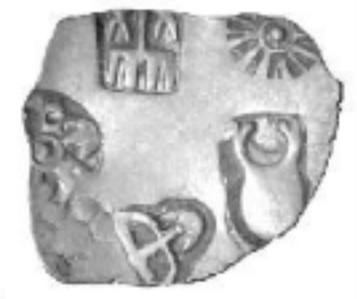
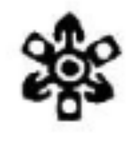
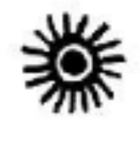
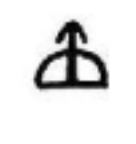
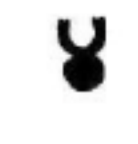
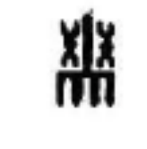
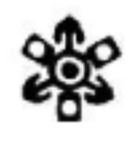
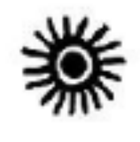
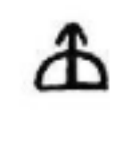
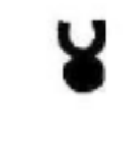
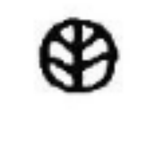
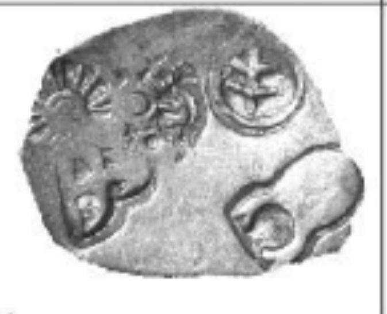
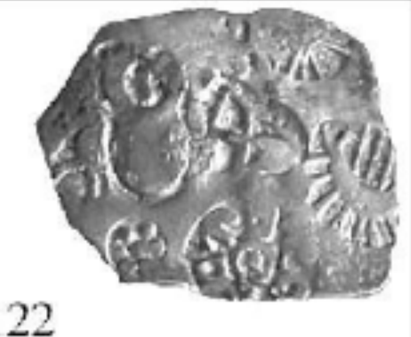
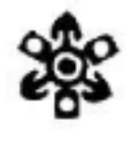
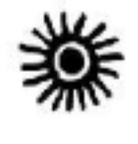
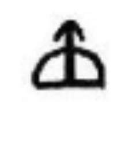
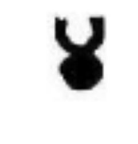
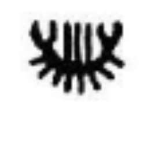
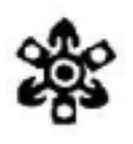
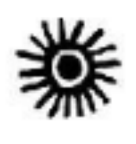
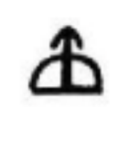
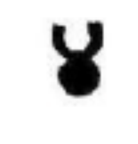
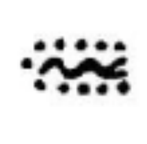
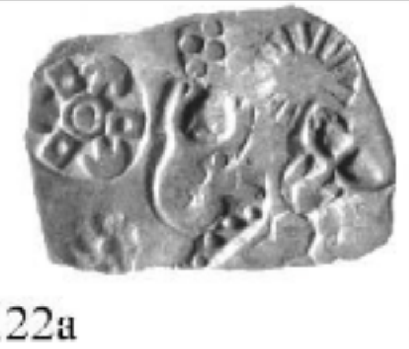
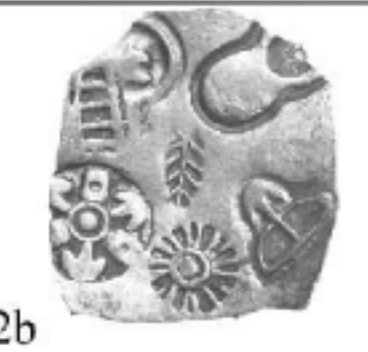
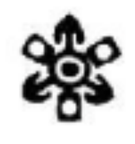
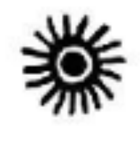
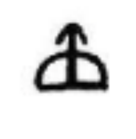
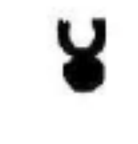
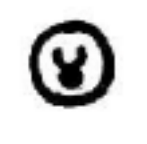
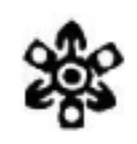
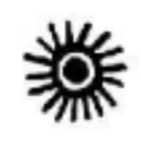
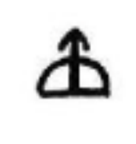
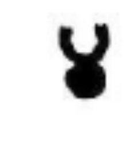
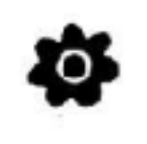
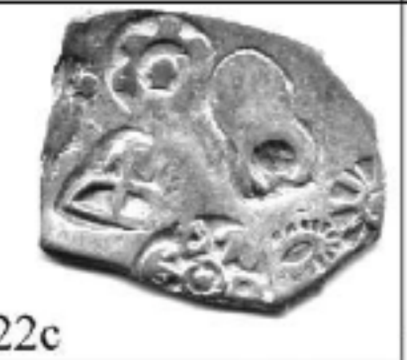
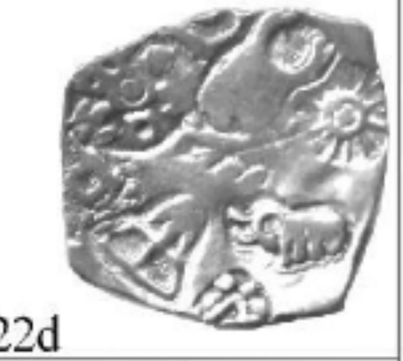
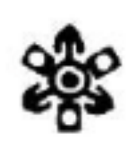
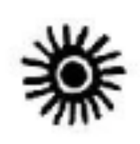
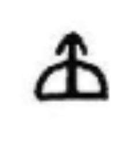
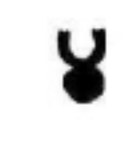
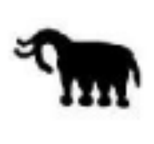
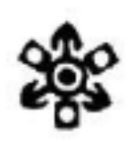
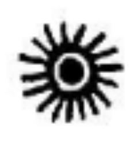
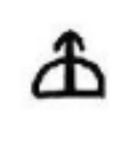
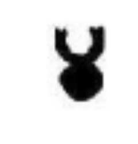
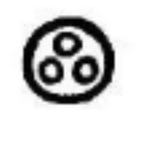
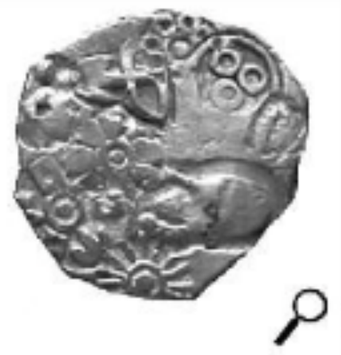
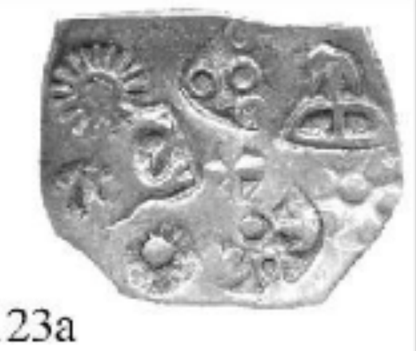
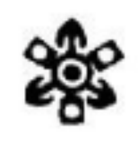
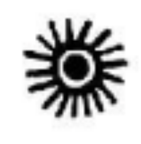
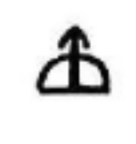
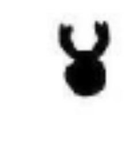
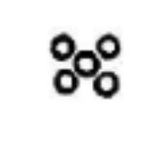
[1] This coin appears to have the third symbol punched three times.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 113 | I XVII A 4<br>PoW | ✺ | ☀ | ⊕ | 🐂 | ⚃ | no image available<br>113 |  113a |
| 113a | I XVII A 28<br>RT, Bar | ✺ | ☀ | ⊕ | 🐂 | 卌 | | |
| 114 | I XVII A 30<br>A | ✺ | ☀ | ⊕ | 🐂 | Ш |  114 |  114a |
| 114a | I XVII A 35<br>RT | ✺ | ☀ | ⊕ | 🐂 | ✿ | | |
| 115 | I XVII A 36<br>A | ✺ | ☀ | ⊕ | 🐂 | 🐕 |  115 |  115a |
| 115a | I XVII A 43<br>A | ✺ | ☀ | ⊕ | 🐂 | ~ | | |
| 115b | I XVII A 47<br>RT | ✺ | ☀ | ⊕ | 🐂 | ⛬ |  115b |  115c |
| 115c | I XVII A 54<br>PT | ✺ | ☀ | ⊕ | 🐂 | ◬ | | |
| 115d | I XVII A 76<br>PT | ✺ | ☀ | ⊕ | 🐂 | ⊙ |  115d |  115e |
| 115e | I XVIII A 1<br>PT | ✺ | ☀ | ⍙ | ⁖● | 🐂 | | |
| 116 | I XVIII A 2<br>A | ✺ | ☀ | ⍙ | ⁖● | ϒ⦿ϒ |  116 |  116a |
| 116a | I XVIIII A 4<br>PT | ✺ | ☀ | ⍙ | ⁖● | ⚃ | | |
| 116b | I XVIII A 28<br>SS | ✺ | ☀ | ⍙ | ⁖● | 卌 |  116b |  117 |
| 117 | I XVIII A 30<br>A | ✺ | ☀ | ⍙ | ⁖● | Ш | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 118 | I XVIII A 35<br>A |  |  |  |  |  |  118 |  118a |
| 118a | I XVIII A 54<br>A |  |  |  |  |  | | |
| 119 | I XVIII B 1<br>Aur, PoW |  |  |  |  |  |  119 |  120 |
| 120 | I XVIII B 2<br>Aur, BKB |  |  |  |  |  | | |
| 120a | I XVIII B 4<br>BM, Bar |  |  |  |  |  |  120a |  121 |
| 121 | I XVIII B 28<br>Aur, SS |  |  |  |  |  | | |
| 121a | I XVIII B 29<br>SS |  |  |  |  |  |  121a |  122 |
| 122 | I XVIII B 30<br>Aur, SS |  |  |  |  |  | | |
| 122a | I XVIII B 33<br>RT |  |  |  |  |  |  122a |  122b |
| 122b | I XVIII B 34<br>SS, Bar |  |  |  |  |  | | |
| 122c | I XVIII B 35<br>A |  |  |  |  |  |  122c |  122d |
| 122d | I XVIII B 36<br>PM |  |  |  |  |  | | |
| 123 | I XVIII B 37<br>Aur, SS |  |  |  |  |  |  123 |  123a |
| 123a | I XVIII B 38<br>RT |  |  |  |  |  | | |

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## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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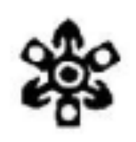
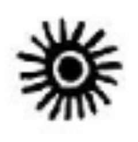
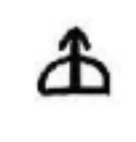
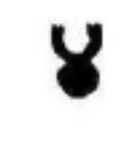
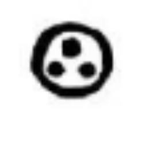
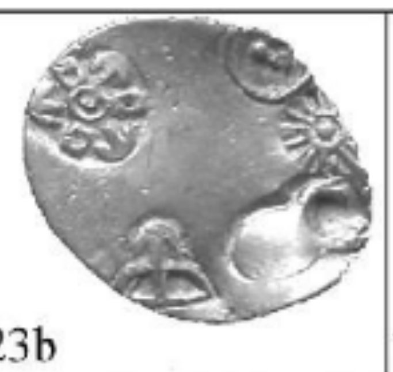
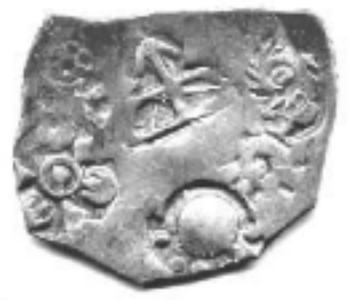
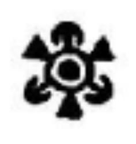
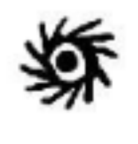
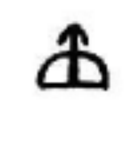
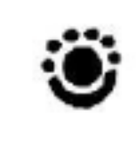
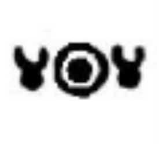
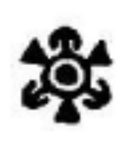
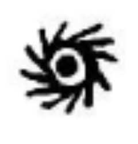
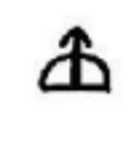
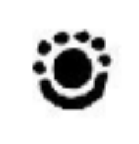
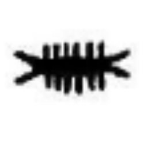
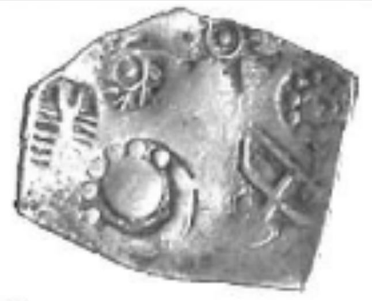
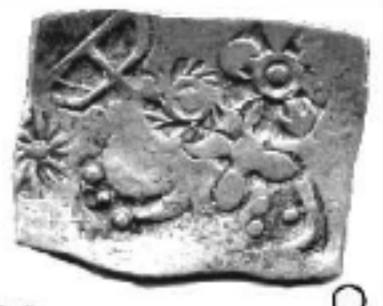
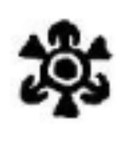
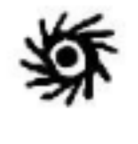
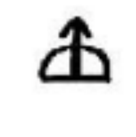
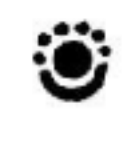
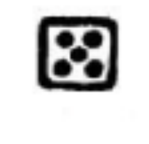
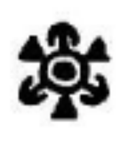
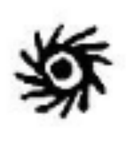
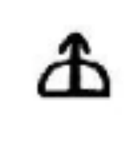
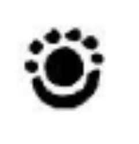
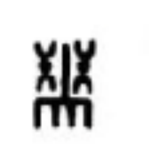
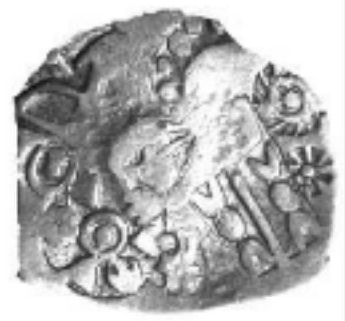
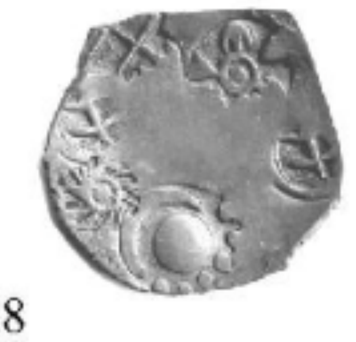
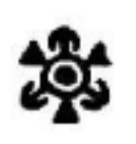
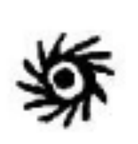
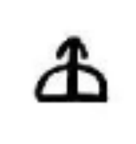
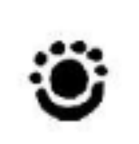
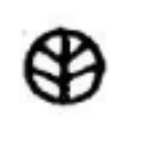
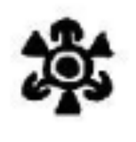
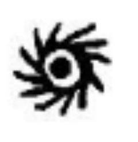
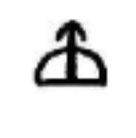
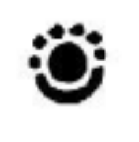
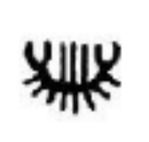
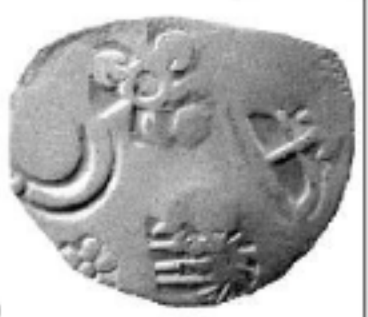
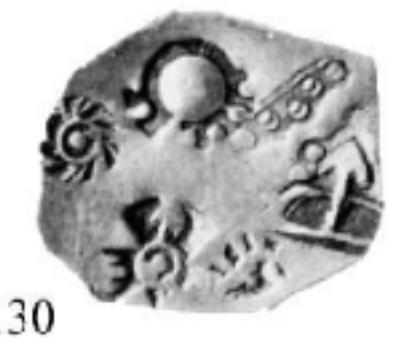
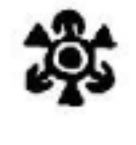
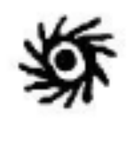
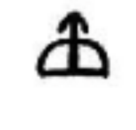
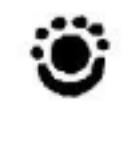
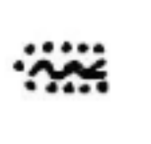
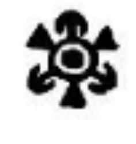
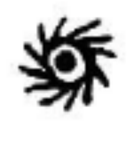
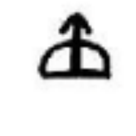
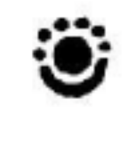
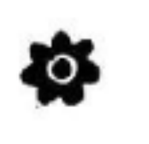
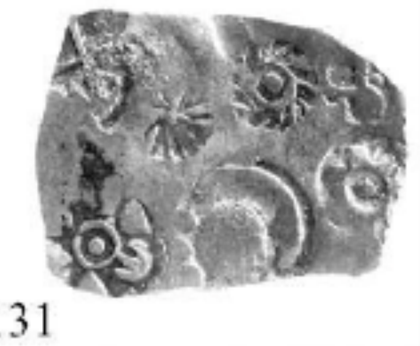
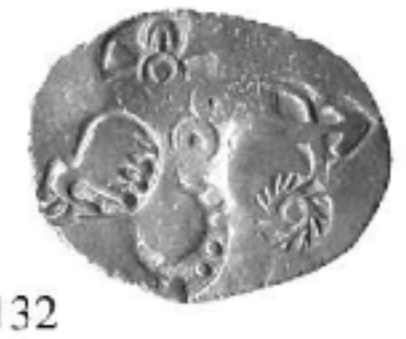
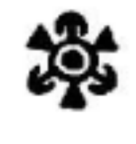
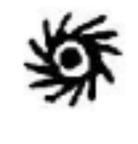
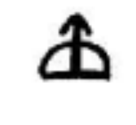
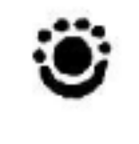
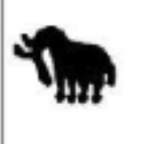
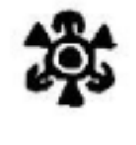
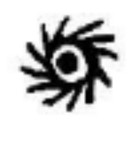
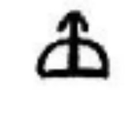
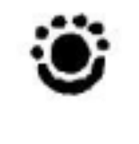
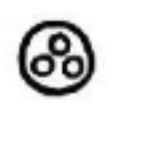
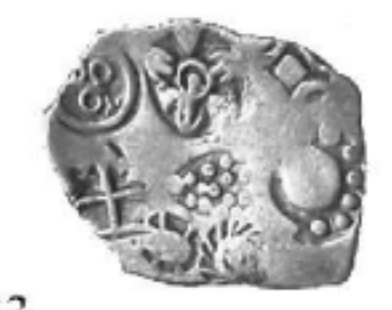
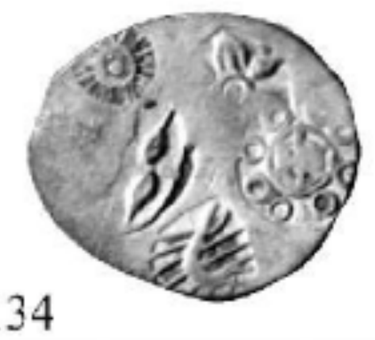
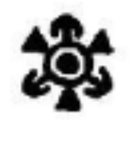
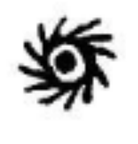
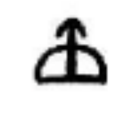
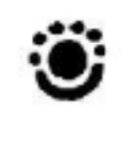
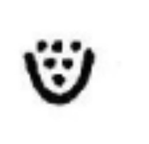
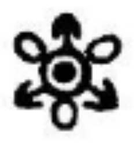
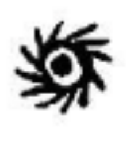
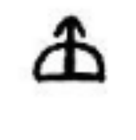
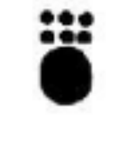
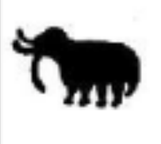
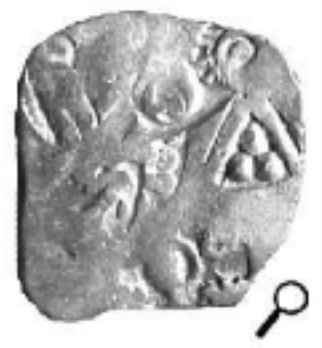
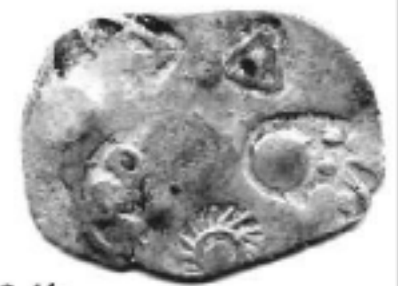
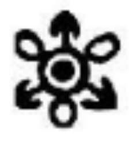
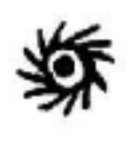
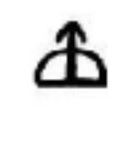
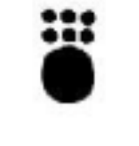
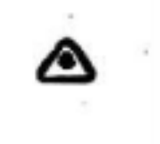
| 123b | I XVIII B 47<br>SS |  |  |  |  |  |  123b |  124 |
| 124 | I XVIII C 2<br>Jaun, SS |  |  |  |  |  | | |
| 125 | I XVIII C 3<br>Aur, RT |  |  |  |  |  |  125 |  126 |
| 126 | I XVIII C 4<br>Jaun, Aur, RT |  |  |  |  |  | | |
| 127 | I XVIII C 28<br>Jaun, PT |  |  |  |  |  |  127 |  128 |
| 128 | I XVIII C 29<br>Jaun, A |  |  |  |  |  | | |
| 129 | I XVIII C 30<br>A |  |  |  |  |  |  129 |  130 |
| 130 | I XVIII C 33<br>Aur, A |  |  |  |  |  | | |
| 131 | I XVIII C 35<br>Aur, Fitz |  |  |  |  |  |  131 |  132 |
| 132 | I XVIII C 36<br>Aur, AF |  |  |  |  |  | | |
| 133 | I XVIII C 37<br>Aur, A |  |  |  |  |  |  133 |  134 |
| 134 | I XVIII C 50<br>Aur |  |  |  |  |  | | |
| 134a | I XVIII D 36<br>A |  |  |  |  |  |  134a |  134b |
| 134b | I XVIII D 54<br>A |  |  |  |  |  | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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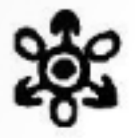
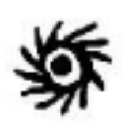
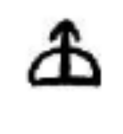
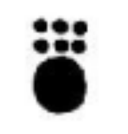
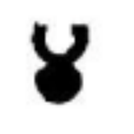
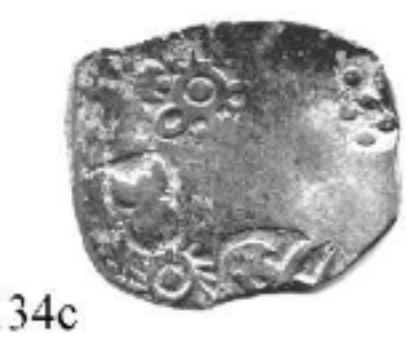
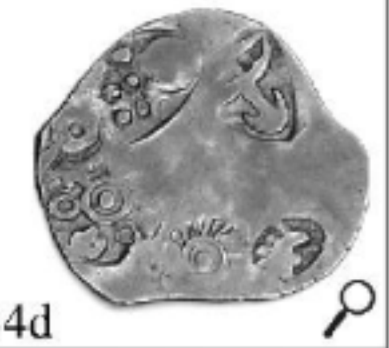
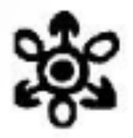
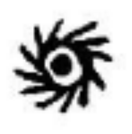
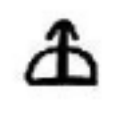
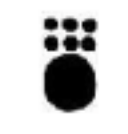
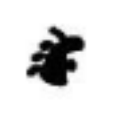
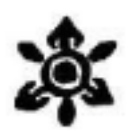
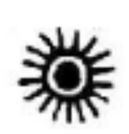
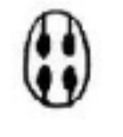
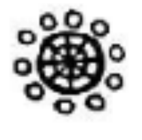
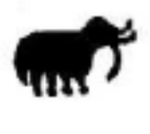
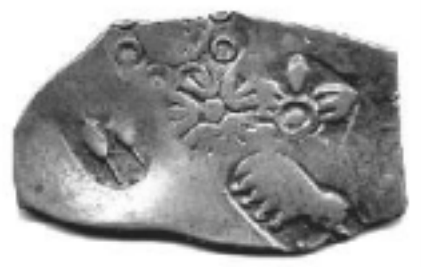
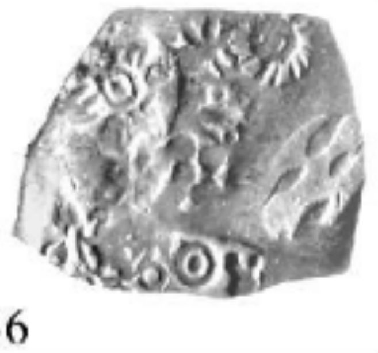
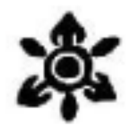
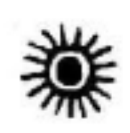
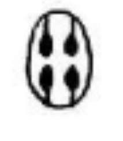
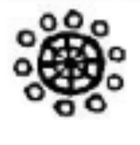
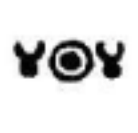
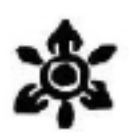
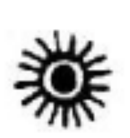
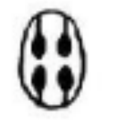
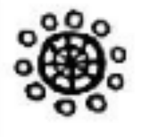
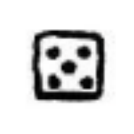
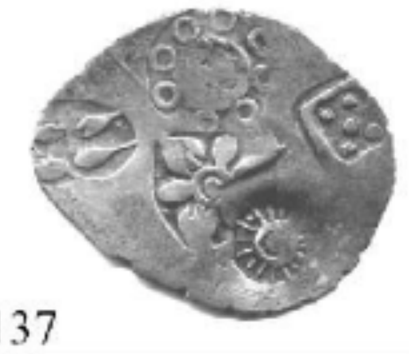
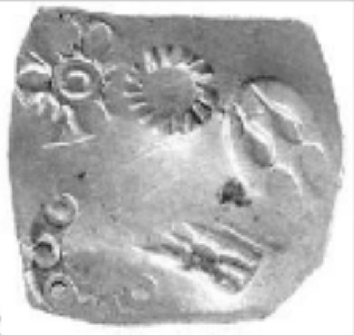
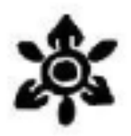
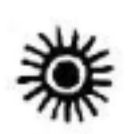
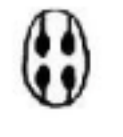
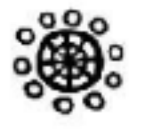
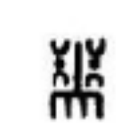
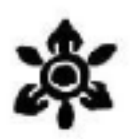
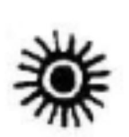
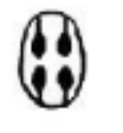
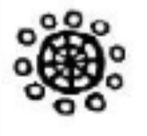
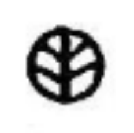
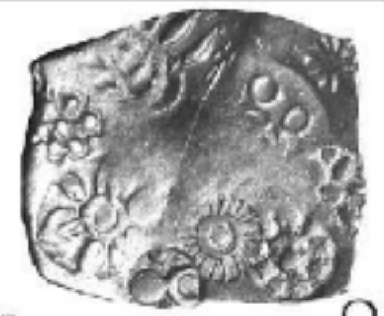
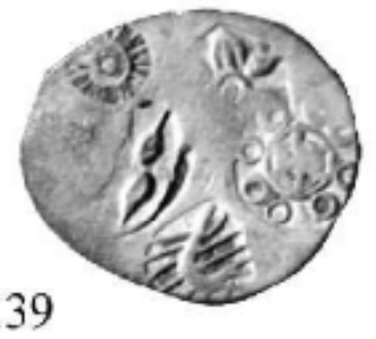
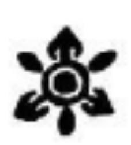
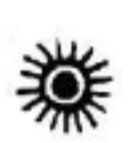
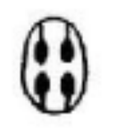
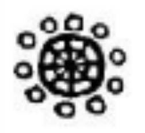
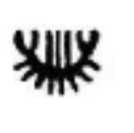
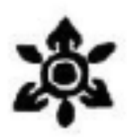
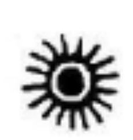
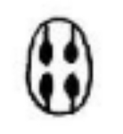
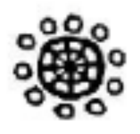
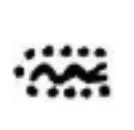
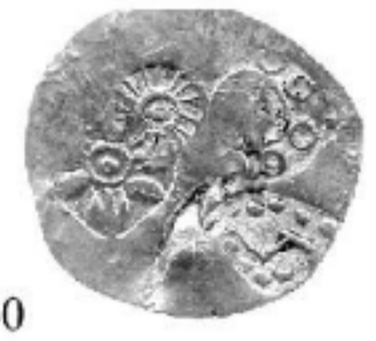
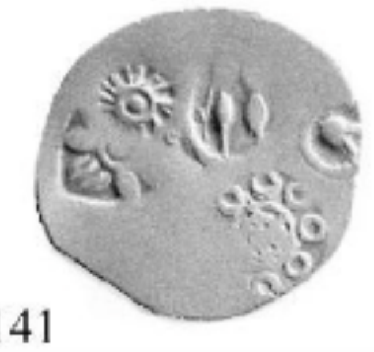
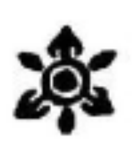
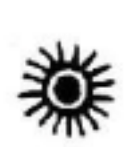
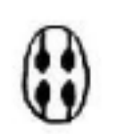
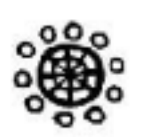
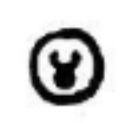
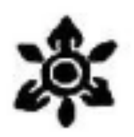
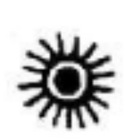
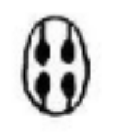
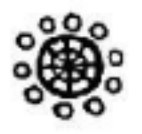
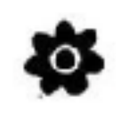
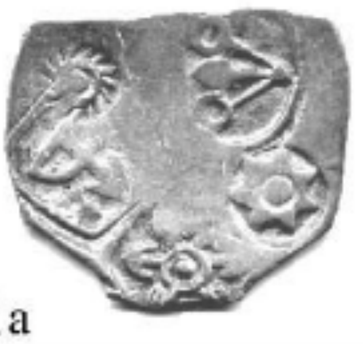
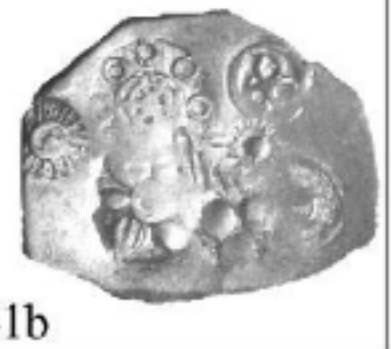
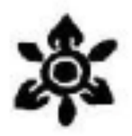
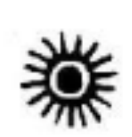
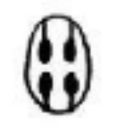
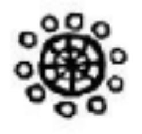
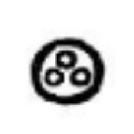
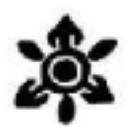
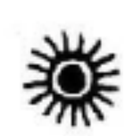
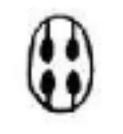
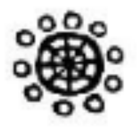
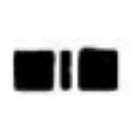
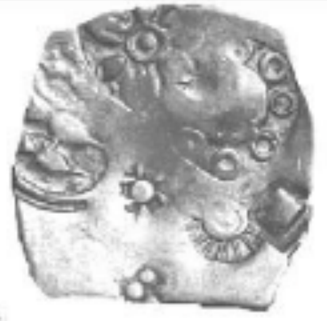
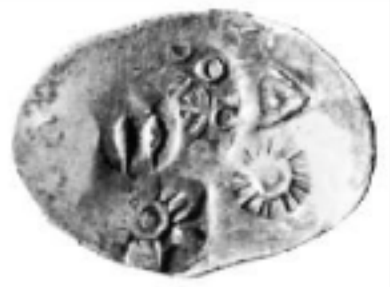
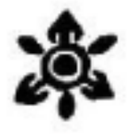
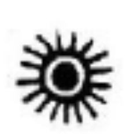
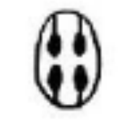
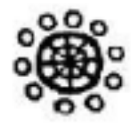
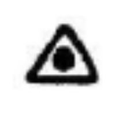
| 134c | I XVIII D 167<br>A |  |  |  |  |  |  134c |  134d |
| 134d | I XVIII D 493<br>RT |  |  |  |  |  | | |
| 135 | I XIX A 1<br>Aur, A |  |  |  |  |  |  135 |  136 |
| 136 | I XIX A 2<br>Aur, A |  |  |  |  |  | | |
| 137 | I XIX A 4<br>A |  |  |  |  |  |  137 |  138 |
| 138 | I XIX A 28<br>A |  |  |  |  |  | | |
| 138a | I XIX A 29<br>PT |  |  |  |  |  |  138a |  139 |
| 139 | I XIX A 30<br>Aur |  |  |  |  |  | | |
| 140 | I XIX A 33<br>A |  |  |  |  |  |  140 |  141 |
| 141 | I XIX A 34<br>Jaun, A |  |  |  |  |  | | |
| 141a | I XIX A 35<br>A |  |  |  |  |  |  141a |  141b |
| 141b | I XIX A 37<br>PT |  |  |  |  |  | | |
| 141c | I XIX A42<br>PT |  |  |  |  |  |  141c |  142 |
| 142 | I XIX A 54<br>A |  |  |  |  |  | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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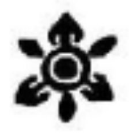
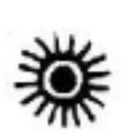
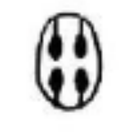
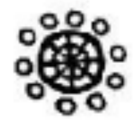
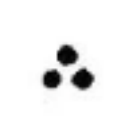
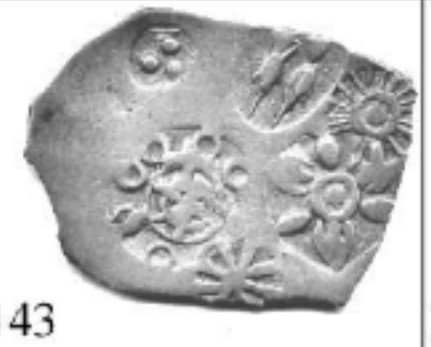
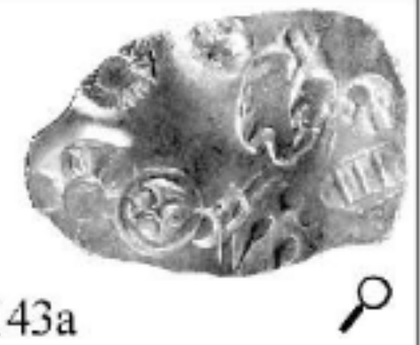
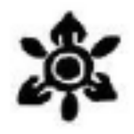
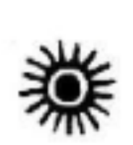
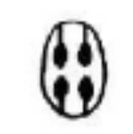
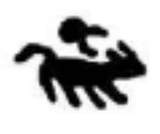
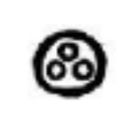
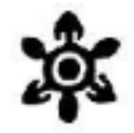
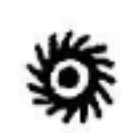
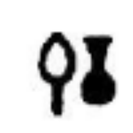
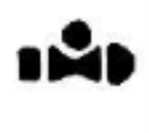
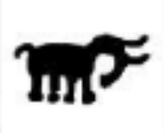
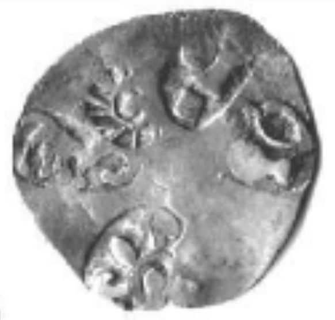
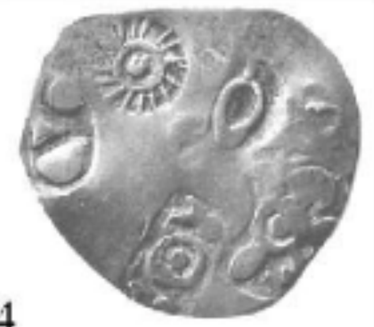
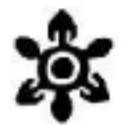
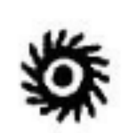
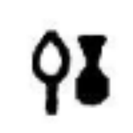
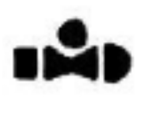
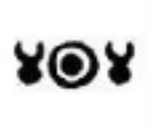
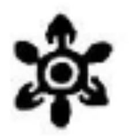
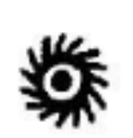
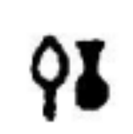
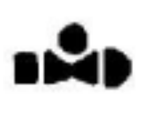
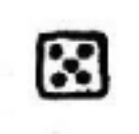
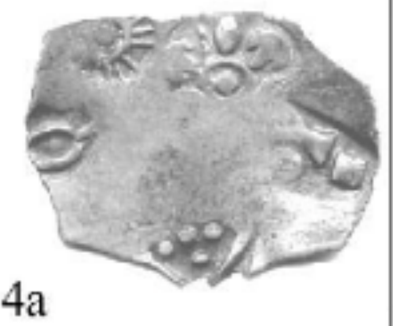
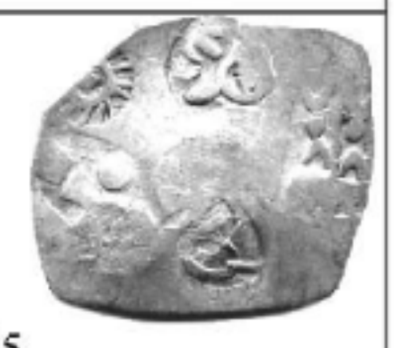
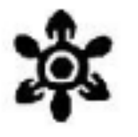
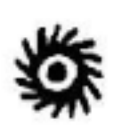
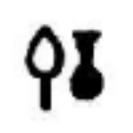
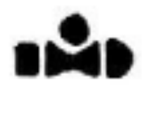
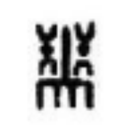
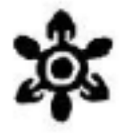
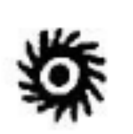
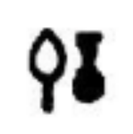
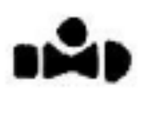
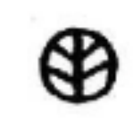
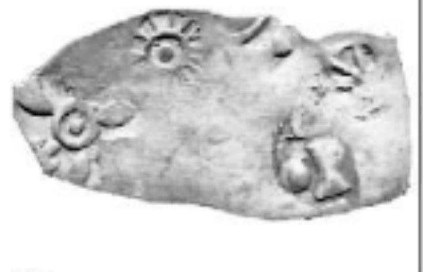
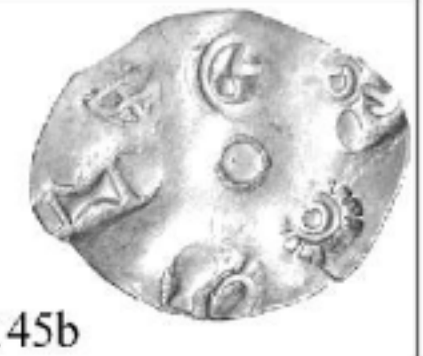
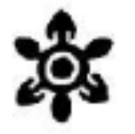
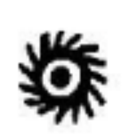
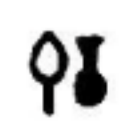
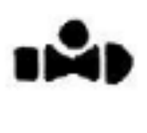
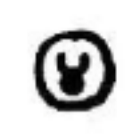
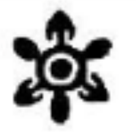
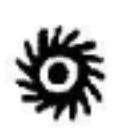
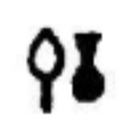
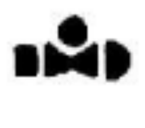
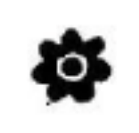
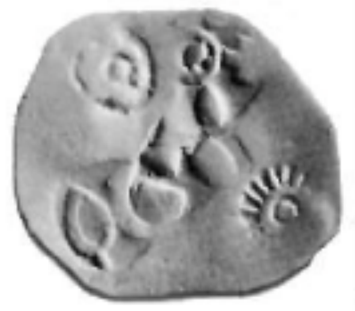
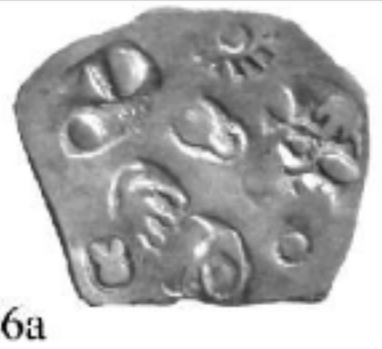
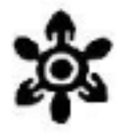
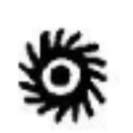
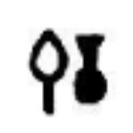
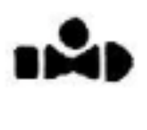
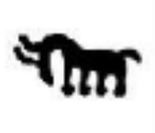
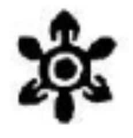
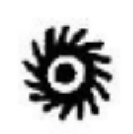
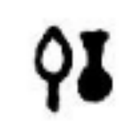
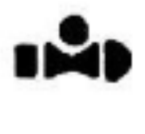
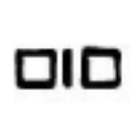
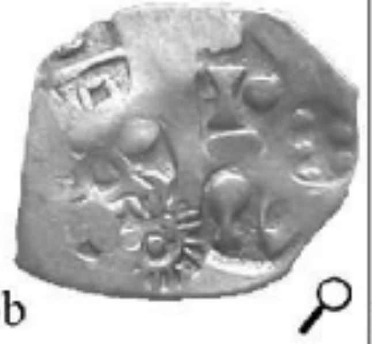
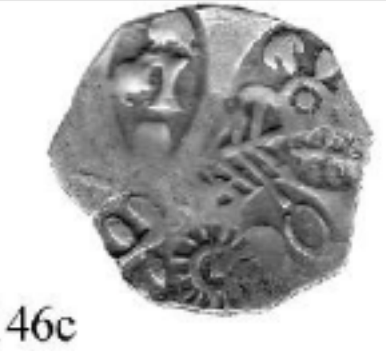
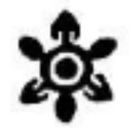
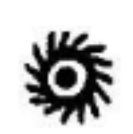
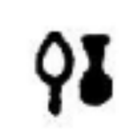
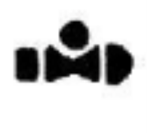
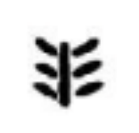
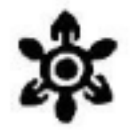
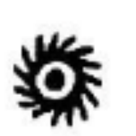
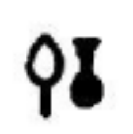
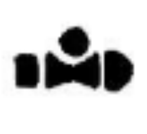
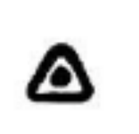
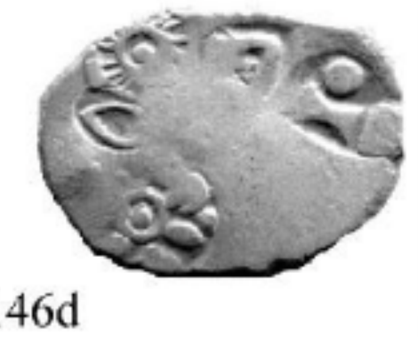
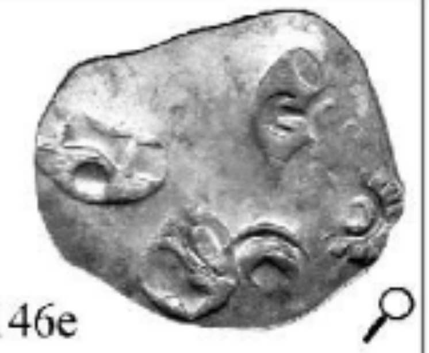
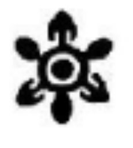
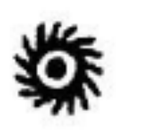
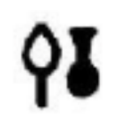
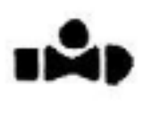
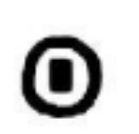
| 143 | I XIX A 73<br>A |  |  |  |  |  |  143 |  143a |
| 143a | I XIX B 37<br>A |  |  |  |  |  | | |
| 143b | I XX A 1 [1]<br>A |  |  |  |  |  |  143b |  144 |
| 144 | I XX A 2<br>A |  |  |  |  |  | | |
| 144a | I XX A 4<br>A |  |  |  |  |  |  144a |  145 |
| 145 | I XX A 28<br>A |  |  |  |  |  | | |
| 145a | I XX A 29<br>A |  |  |  |  |  |  145a |  145b |
| 145b | I XX A 34<br>JPG |  |  |  |  |  | | |
| 146 | I XX A 35<br>Aur, A |  |  |  |  |  |  146 |  146a |
| 146a | I XX A 36<br>PT |  |  |  |  |  | | |
| 146b | I XX A 42<br>SS |  |  |  |  |  |  146b |  146c |
| 146c | I XX A 52 [2]<br>PM |  |  |  |  |  | | |
| 146d | I XX A 54<br>RT |  |  |  |  |  |  146d |  146e |
| 146e | I XX A 494 [3]<br>A |  |  |  |  |  | | |

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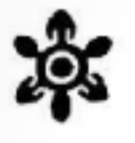
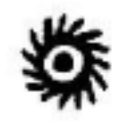
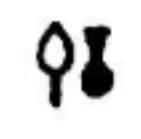
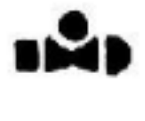
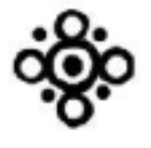
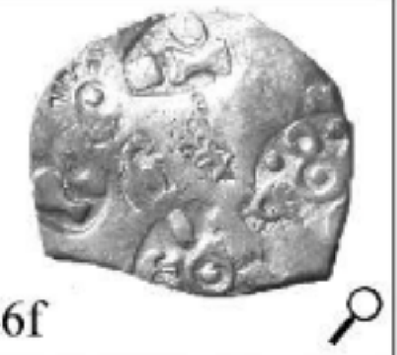
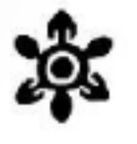
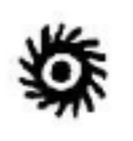
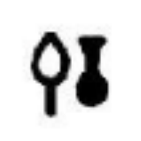
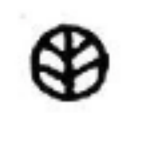
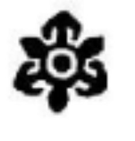
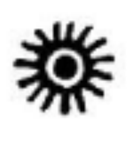
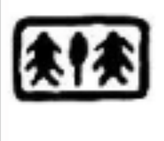
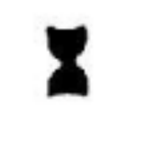
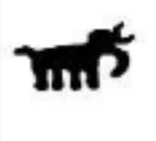
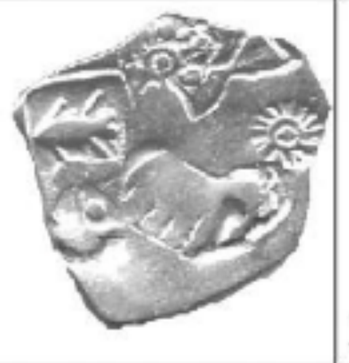
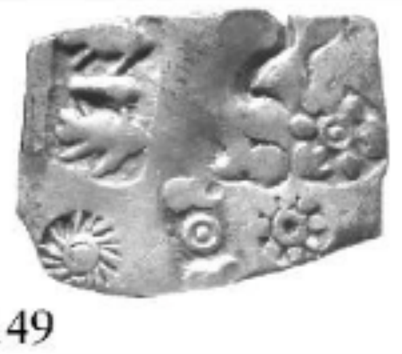
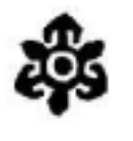
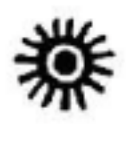
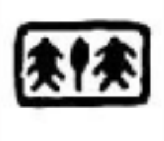
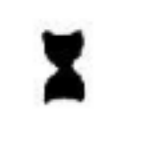
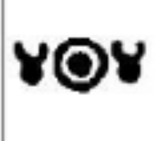
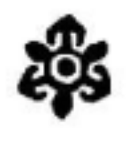
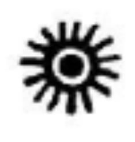
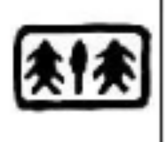
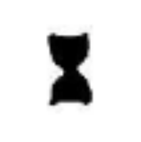
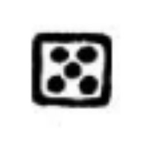
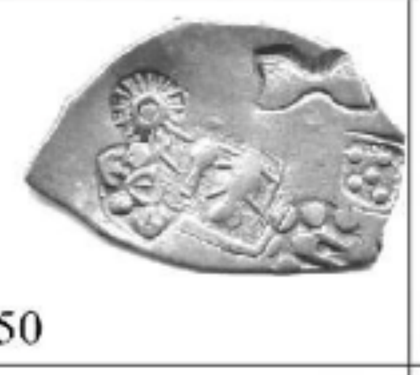
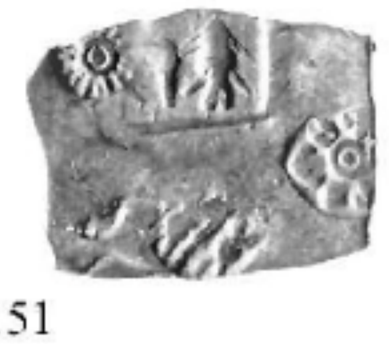
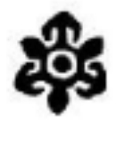
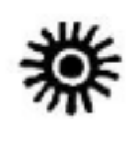
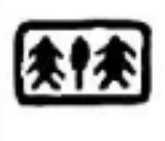
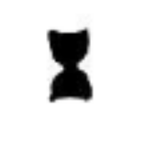
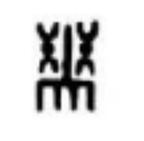
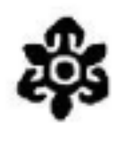
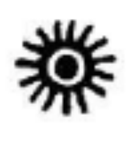
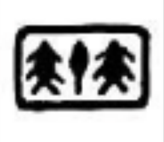
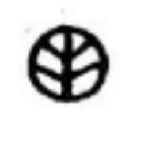
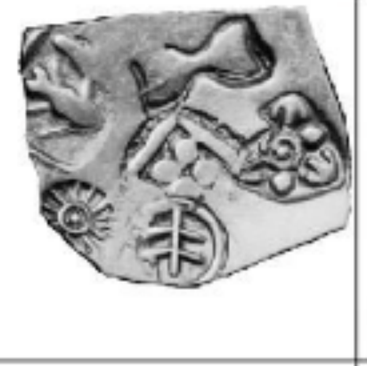
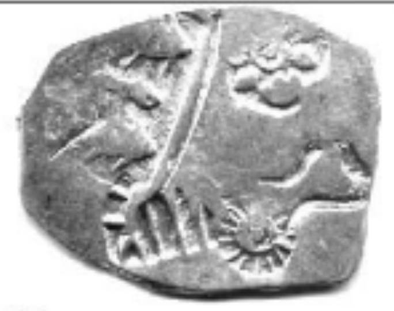
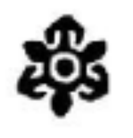
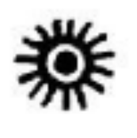
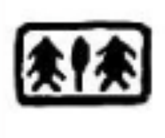
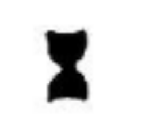
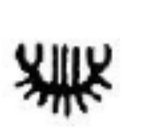
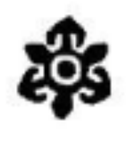
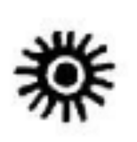
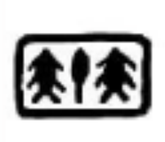
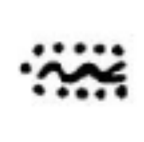
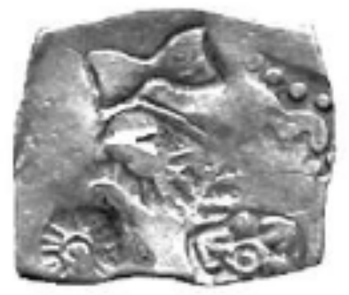
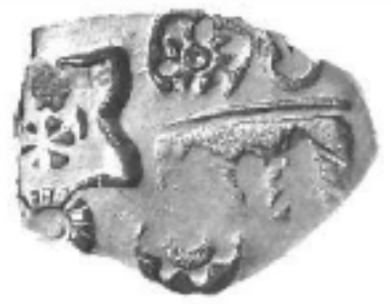
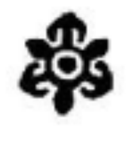
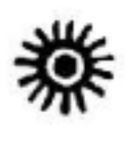
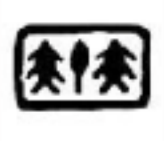
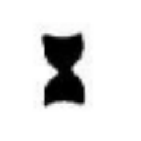
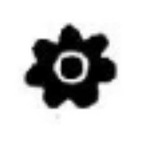
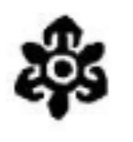
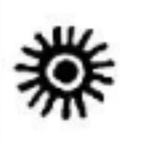
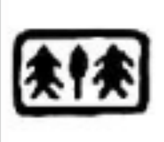
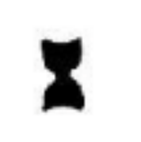
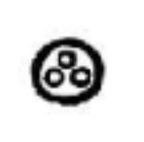
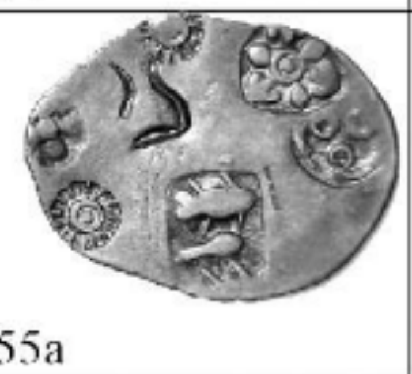
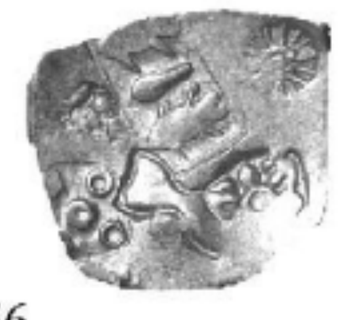
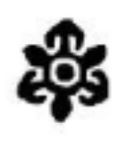
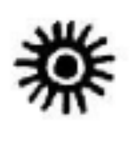
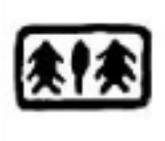
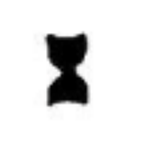
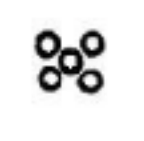
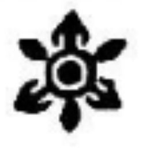
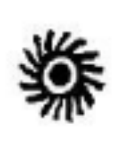
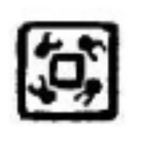
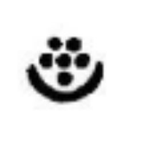
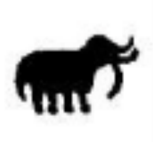
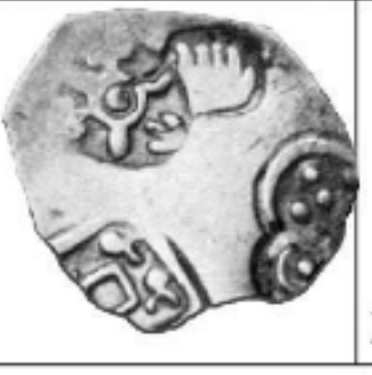
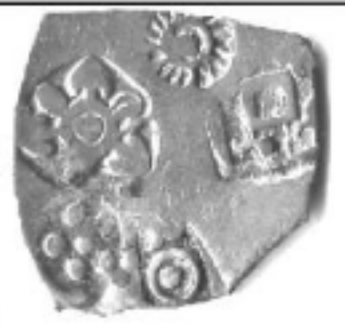
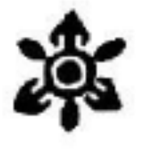
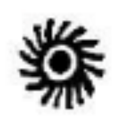
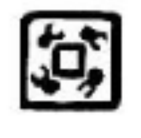
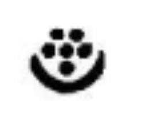
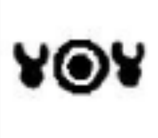
[1] Previously 143a in first Edition [2] Previously 146b in first edition [3] Formerly 146a in the first edition.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 146f | I XX A 496<br>A, PT |  |  |  |  |  |  146f | no image available<br>147 |
| 147 | I XX B 29 [1]<br>Aur, BKB |  |  |  | |  | | |
| 148 | I XXI A 1<br>Aur, Jaun |  |  |  |  |  |  148 |  149 |
| 149 | I XXI A 2<br>Aur, A |  |  |  |  |  | | |
| 150 | I XXI A 4<br>Aur, A |  |  |  |  |  |  150 |  151 |
| 151 | I XXI A 28<br>Aur, BM |  |  |  |  |  | | |
| 152 | I XXI A 29<br>Aur, BKB, BM |  |  |  | |  |  152 |  153 |
| 153 | I XXI A 30<br>Aur, A |  |  |  |  |  | | |
| 154 | I XXI A 33<br>Aur, SS |  |  |  | |  |  154 |  155 |
| 155 | I XXI A 35<br>Aur, Jaun, BKB, PT |  |  |  |  |  | | |
| 155a | I XXI A 37<br>PM |  |  |  |  |  |  155a |  156 |
| 156 | I XXI A 38<br>Aur, PT |  |  |  |  |  | | |
| 157 | I XXII A 1<br>Aur, SS |  |  |  |  |  |  157 |  158 |
| 158 | I XXII A 2<br>Aur, A |  |  |  |  |  | | |

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[1] In the absence of further examples this type must remain doubtful.

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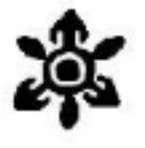
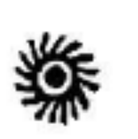
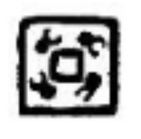
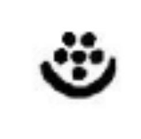
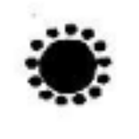
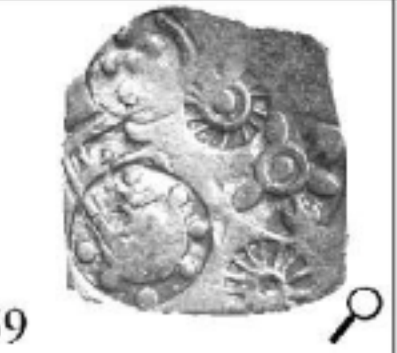
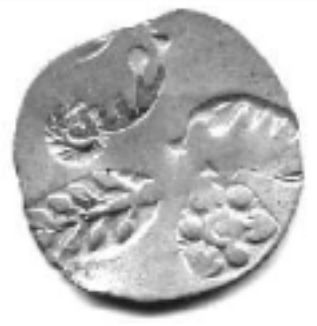
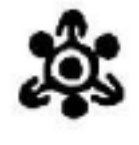
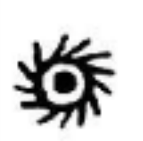
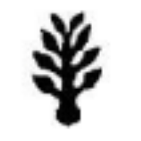
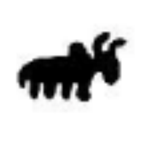
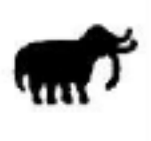
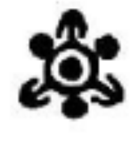
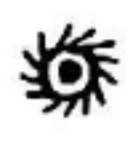
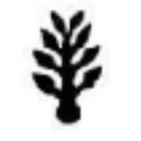
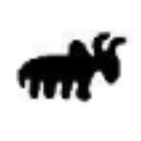
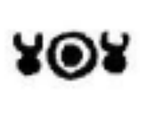
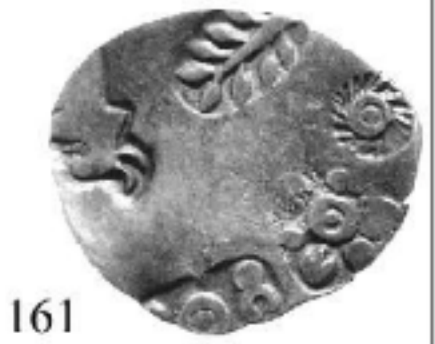
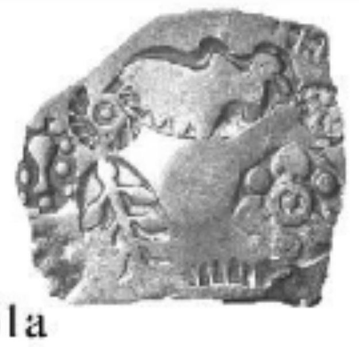
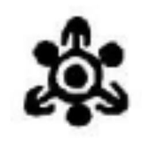
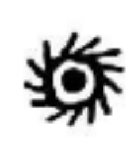
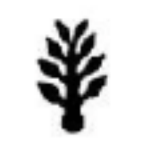
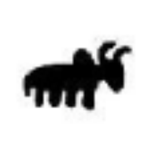
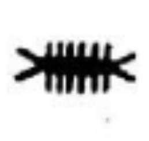
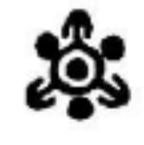
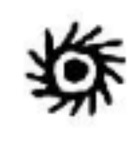
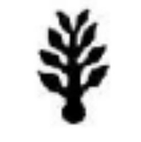
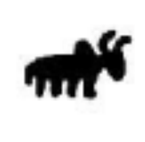
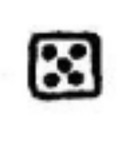
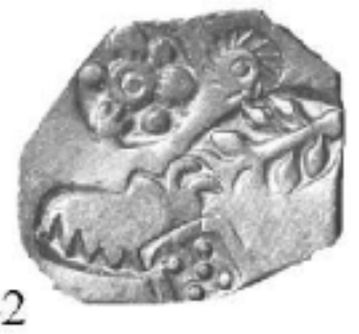
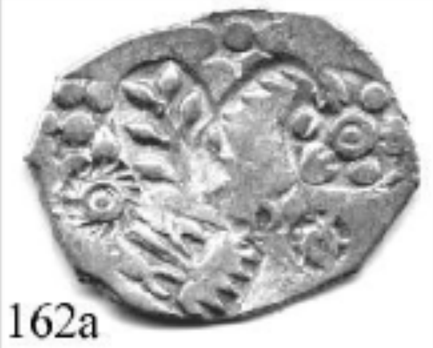
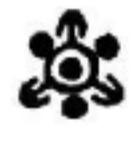
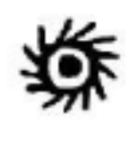
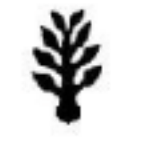
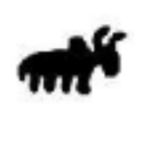
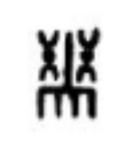
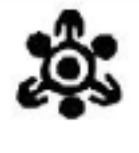
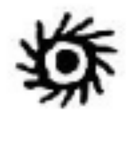
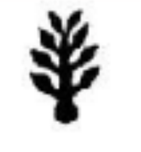
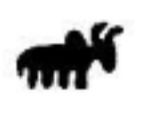
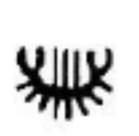
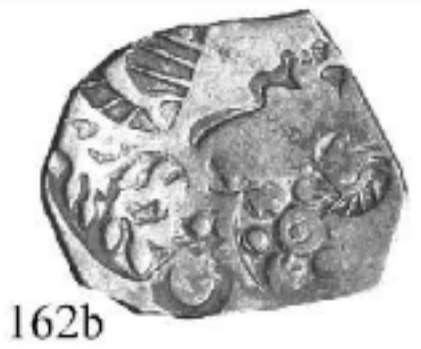
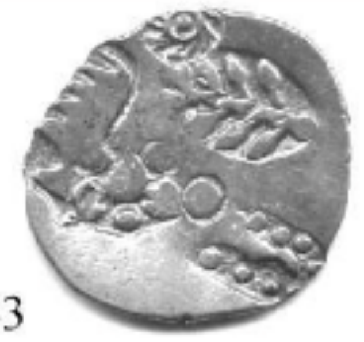
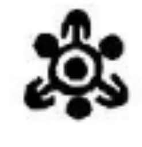
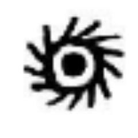
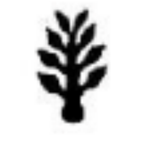
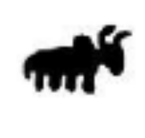
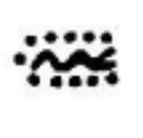
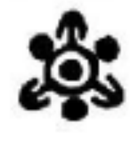
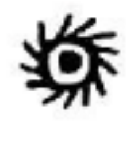
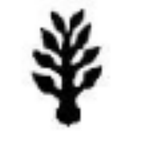
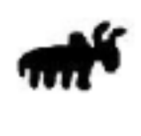
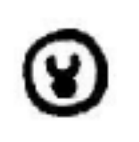
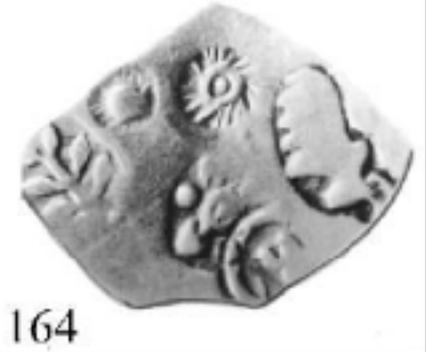
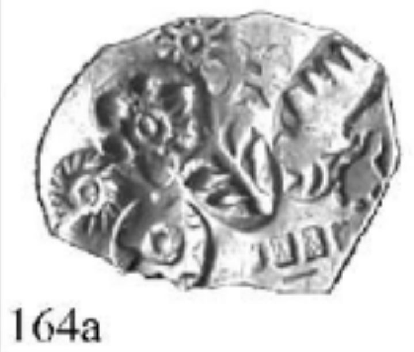
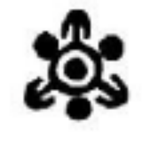
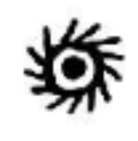
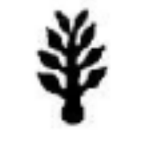
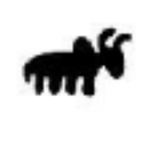
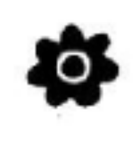
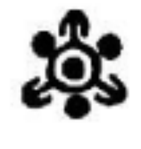
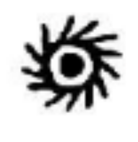
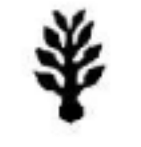
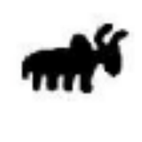
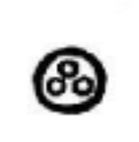
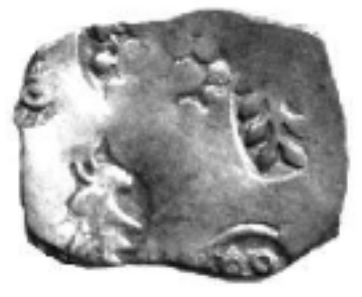
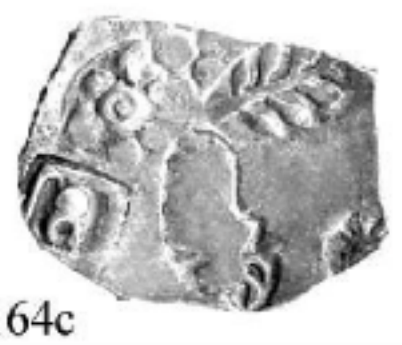
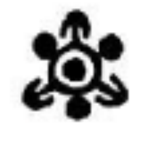
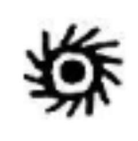
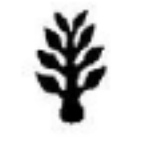
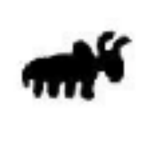
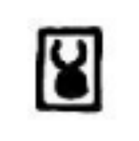
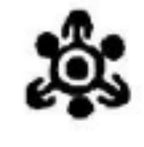
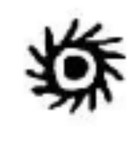
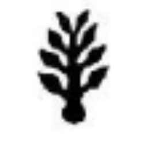
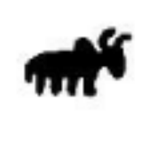
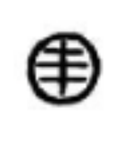
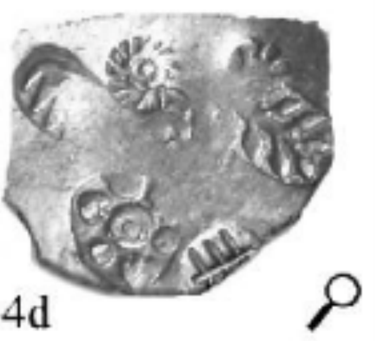
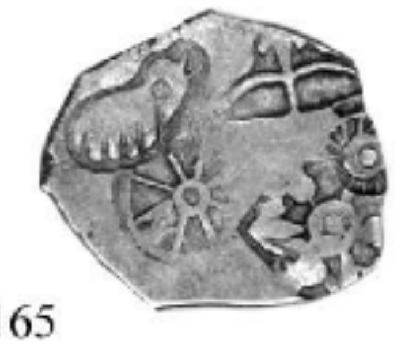
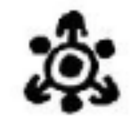
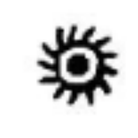
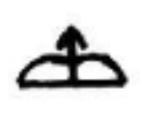
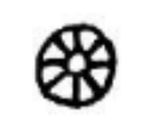
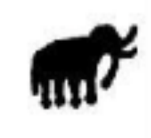
## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 159 | I XXII A 39<br>Aur, PT |  |  |  |  |  |  159 |  160 |
| 160 | I XXIII A 1<br>Aur, Jaun, BM, A |  |  |  |  |  | | |
| 161 | I XXIII A 2<br>Aur, BM |  |  |  |  |  |  161 |  161a |
| 161a | I XXIII A 3<br>PT |  |  |  |  |  | | |
| 162 | I XXIII A 4<br>Aur, PT |  |  |  |  |  |  162 |  162a |
| 162a | I XXIII A 28<br>A |  |  |  |  |  | | |
| 162b | I XXIII A 30<br>A |  |  |  |  |  |  162b |  163 |
| 163 | I XXIII A 33<br>A |  |  |  |  |  | | |
| 164 | I XXIII A 34<br>Aur, Jaun, A |  |  |  |  |  |  164 |  164a |
| 164a | I XXIII A 35<br>SS |  |  |  |  |  | | |
| 164b | I XXIII A 37<br>PM, Bar |  |  |  |  |  |  164b |  164c |
| 164c | I XXIII A 41<br>Fitz |  |  |  |  |  | | |
| 164d | I XXIII A 620<br>PT, SS |  |  |  |  |  |  164d |  165 |
| 165 | I XXIV A 1<br>Aur, BKB, RT |  |  |  |  |  | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS |
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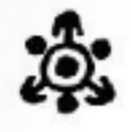
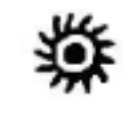
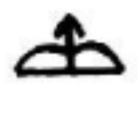
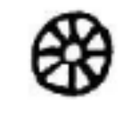
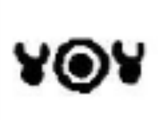
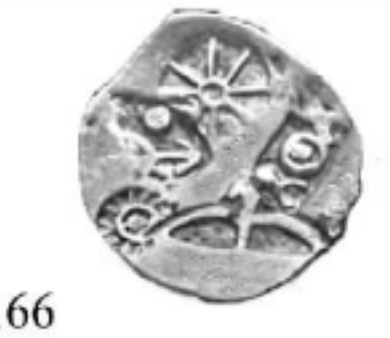
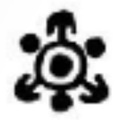
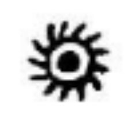
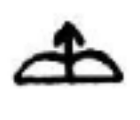
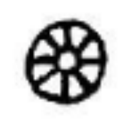
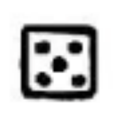
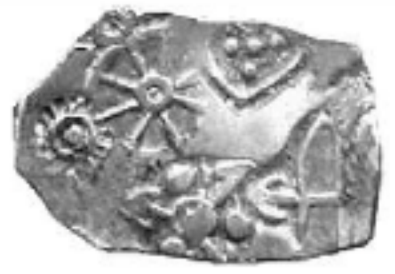
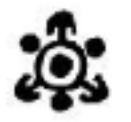
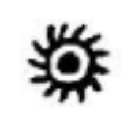
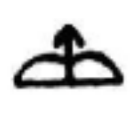
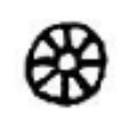
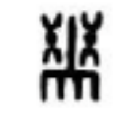
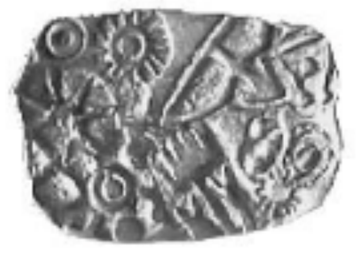
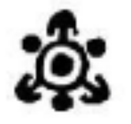
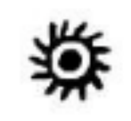
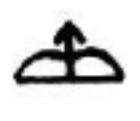
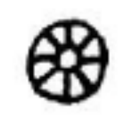
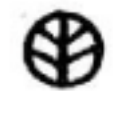
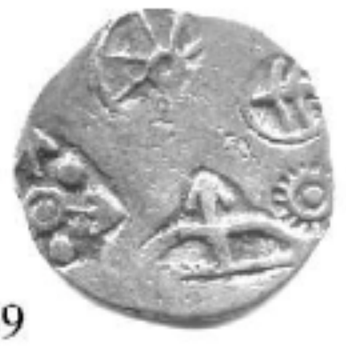
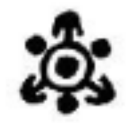
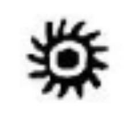
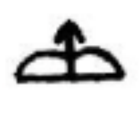
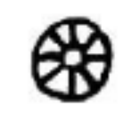
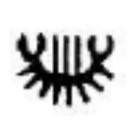
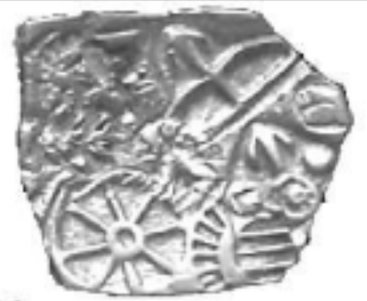
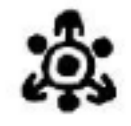
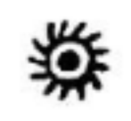
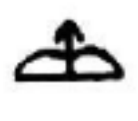
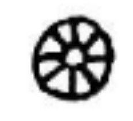
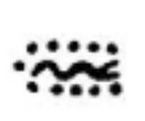
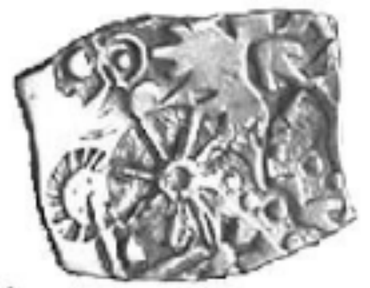
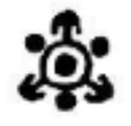
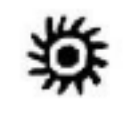
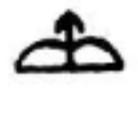
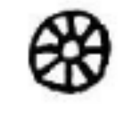
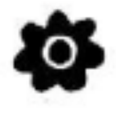
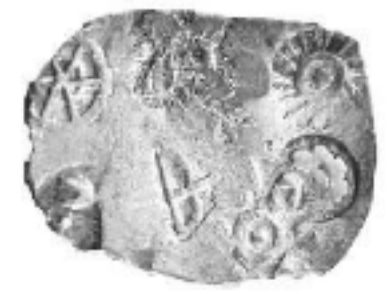
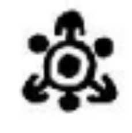
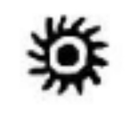
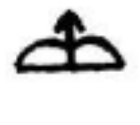
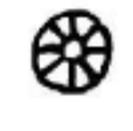
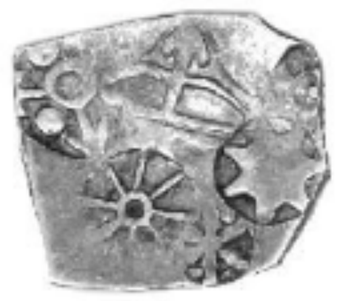
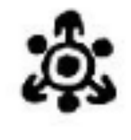
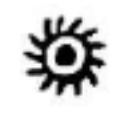
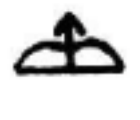
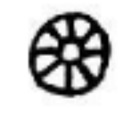
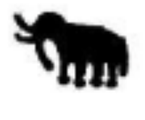
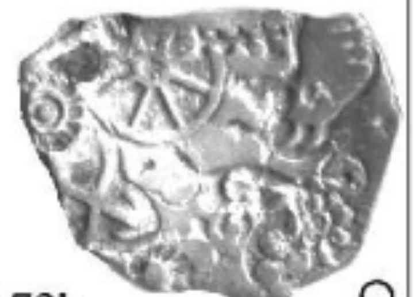
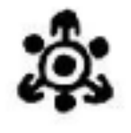
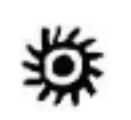
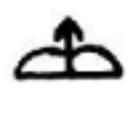
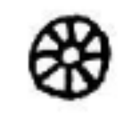
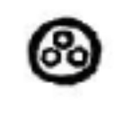
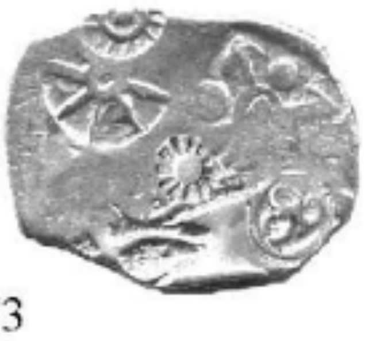
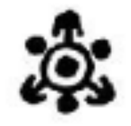
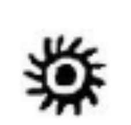
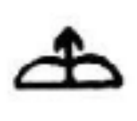
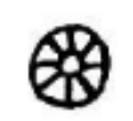
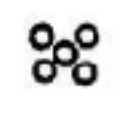
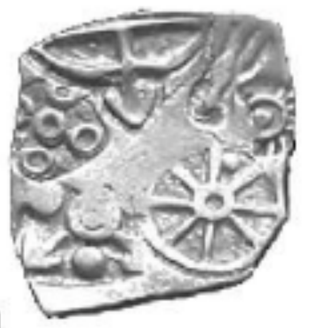
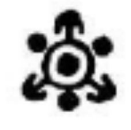
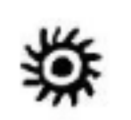
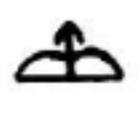
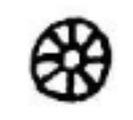
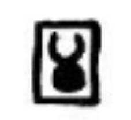
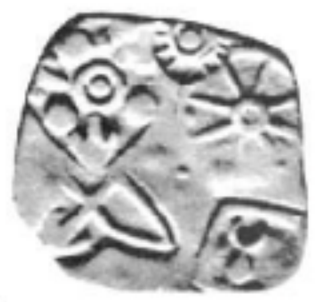
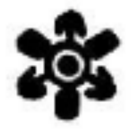
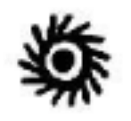
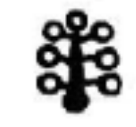
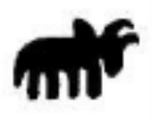
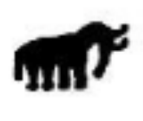
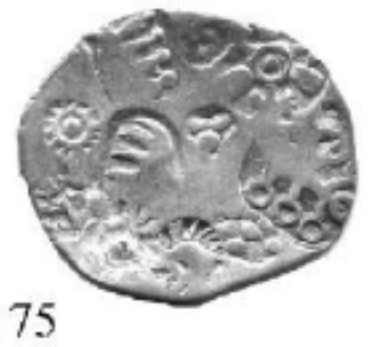
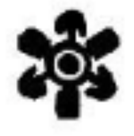
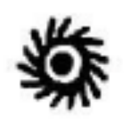
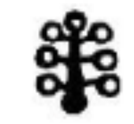
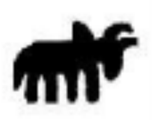
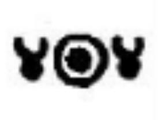
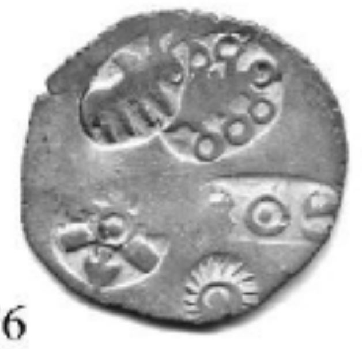
| 166 | I XXIV A 2<br>Aur, BKB, A |  |  |  |  |  |  166 |
| 167 | I XXIV A 4<br>Aur, SS |  |  |  |  |  |  167 |
| 168 | I XXIV A 28<br>Aur, SS |  |  |  |  |  |  168 |
| 169 | I XXIV A 29<br>Aur, A |  |  |  |  |  |  169 |
| 170 | I XXIV A 30<br>Aur, SS |  |  |  |  |  |  170 |
| 171 | I XXIV A 33<br>Aur, SS |  |  |  |  |  |  171 |
| 172 | I XXIV A 35<br>Aur, RT |  |  |  |  |  |  172 |
| 172a | I XXIV A 35 a<br>A |  |  |  |  | [1] |  172a |
| 172b | I XXIV A 36<br>PM |  |  |  |  |  |  172b |
| 173 | I XXIV A 37<br>Aur, A |  |  |  |  |  |  173 |
| 173a | I XXIV A 38<br>SS |  |  |  |  |  |  173a |
| 174 | I XXIV A 41<br>Aur, BM |  |  |  |  |  |  174 |
| 175 | I XXV A 1<br>Aur, A |  |  |  |  |  |  175 |
| 176 | I XXV A 2<br>Aur, A |  |  |  |  |  |  176 |

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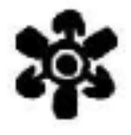
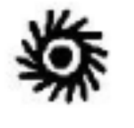
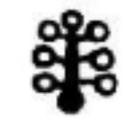
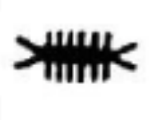
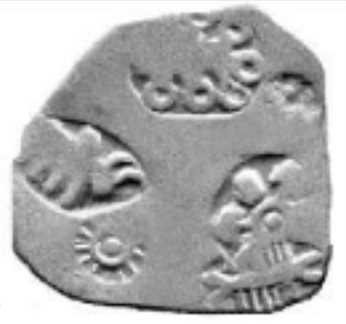
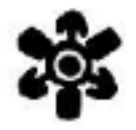
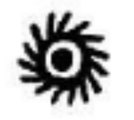
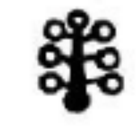
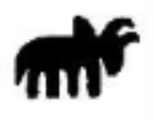
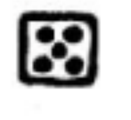
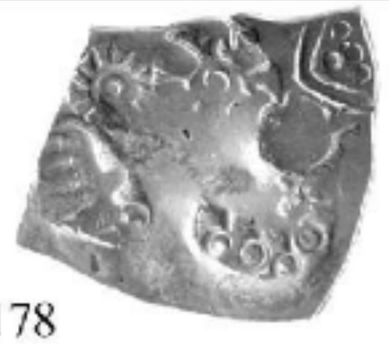
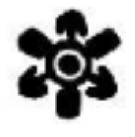
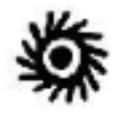
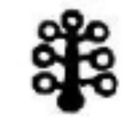
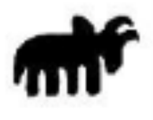
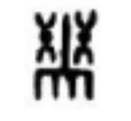
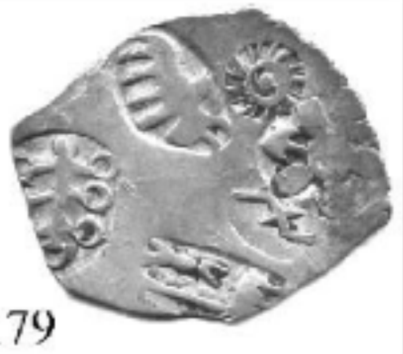
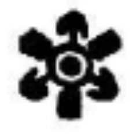
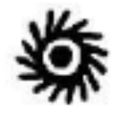
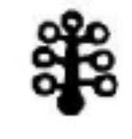
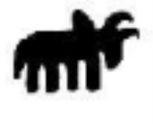
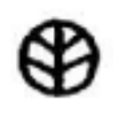
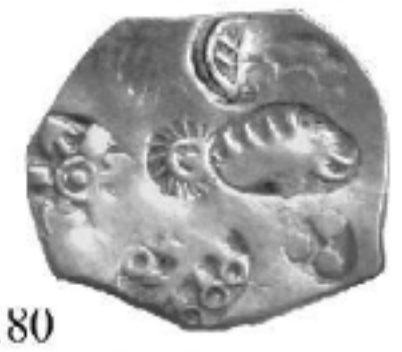
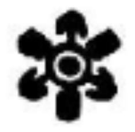
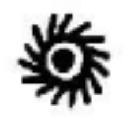
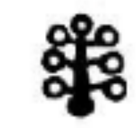
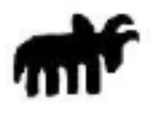
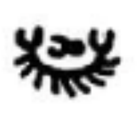
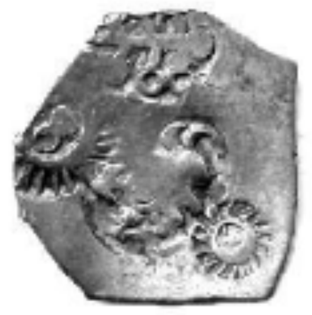
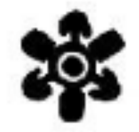
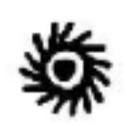
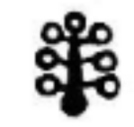
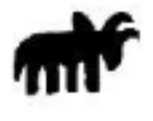
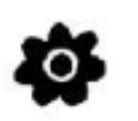
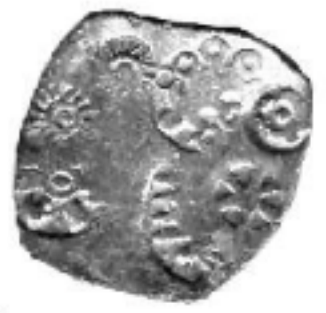
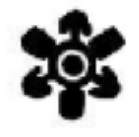
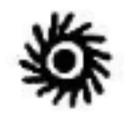
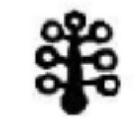
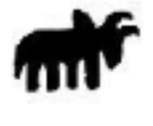
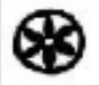
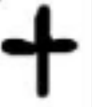
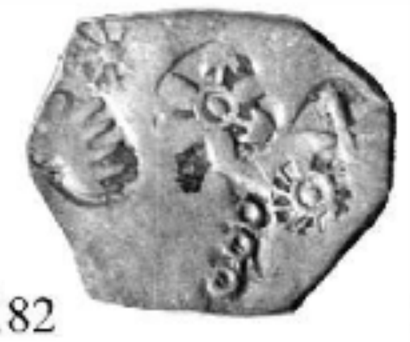
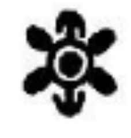
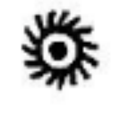
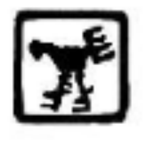
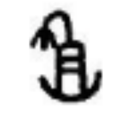
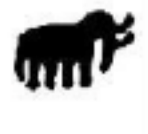
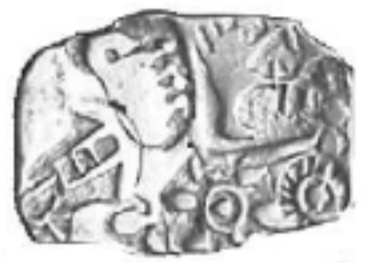
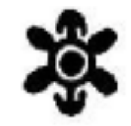
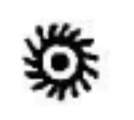
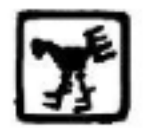
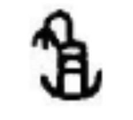
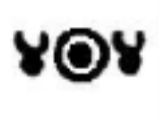
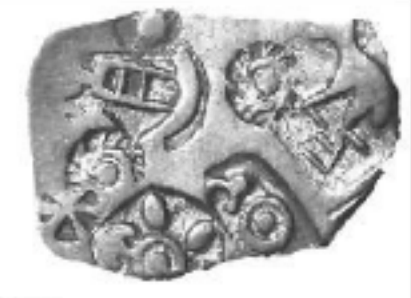
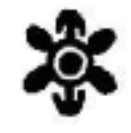
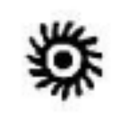
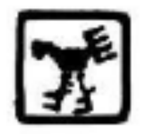
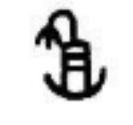
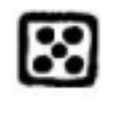
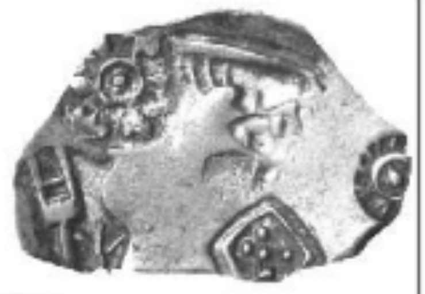
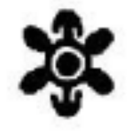
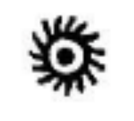
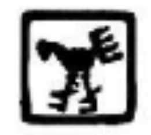
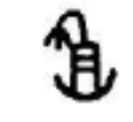
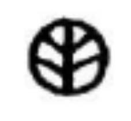
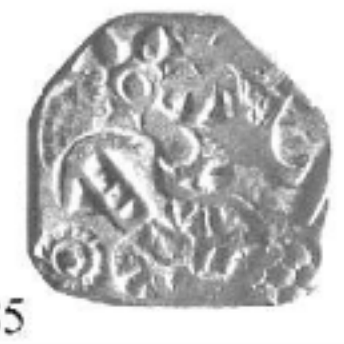
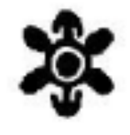
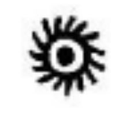
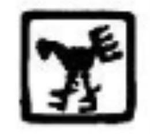
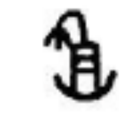
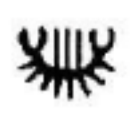
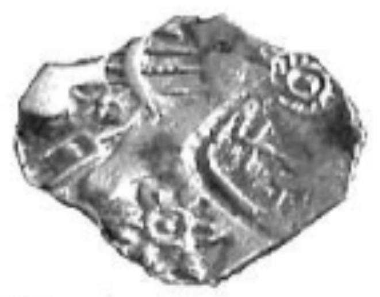
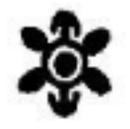
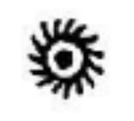
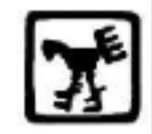
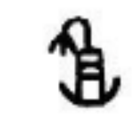
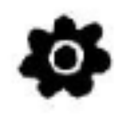
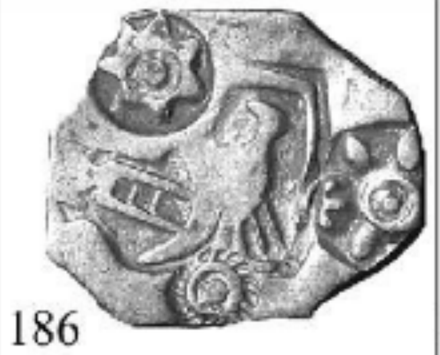
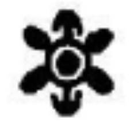
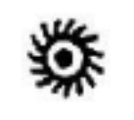
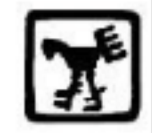
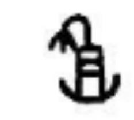
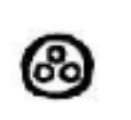
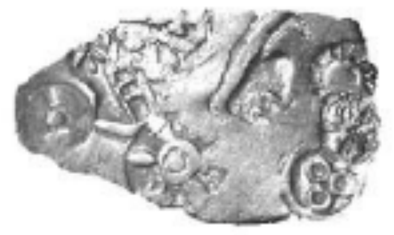
[1] This symbol may be intended as symbol 35 but the points are sharper and there is no central pellet.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| 177 | I XXV A 3<br>Aur, A |  |  |  | |  |  177 |
| 178 | I XXV A 4<br>Jaun, SS, Fitz |  |  |  |  |  |  178 |
| 179 | I XXV A 28<br>A |  |  |  |  |  |  179 |
| 180 | I XXV A 29<br>Aur, A |  |  |  |  |  |  180 |
| 181 | I XXV A 31<br>Aur, A |  |  |  |  |  |  181 |
| 181a | I XXV A 35<br>PM |  |  |  |  |  |  181a |
| 182 | I XXV A 55? [1]<br>Aur |  |  |  |  |  or  |  182 |
| 183 | I XXVI A 1<br>Aur, SS |  |  |  |  |  |  183 |
| 184 | I XXVI A 2<br>Aur, PT |  |  |  |  |  |  184 |
| 184a | I XXVI A 4<br>PT |  |  |  |  |  |  184a |
| 185 | I XXVI A 29<br>Aur |  |  |  |  |  |  185 |
| 185a | I XXVI A 30<br>SS |  |  |  |  |  |  185a |
| 186 | I XXVI A 35<br>Aur, PT |  |  |  |  |  |  186 |
| 186a | I XXVI A 37<br>PM |  |  |  |  |  |  186a |

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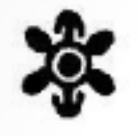
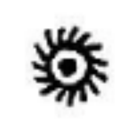
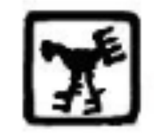
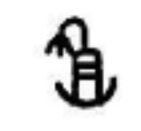
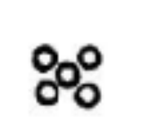
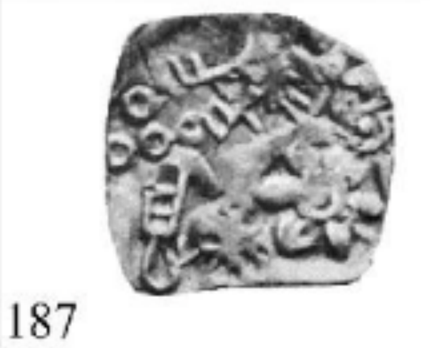
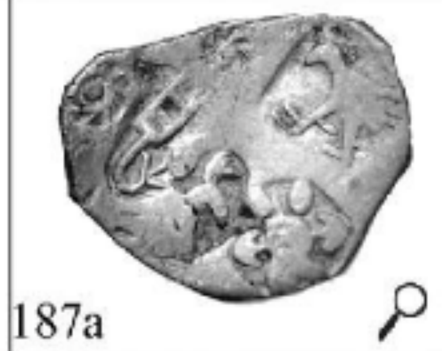
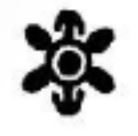
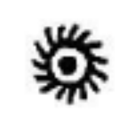
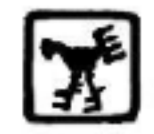
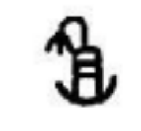
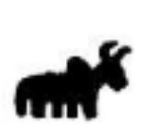
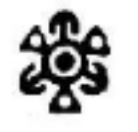
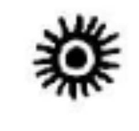
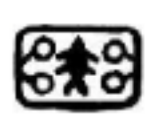
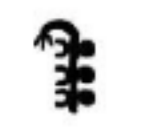
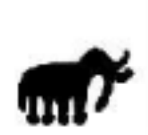
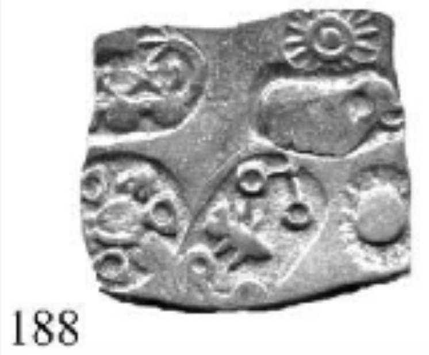
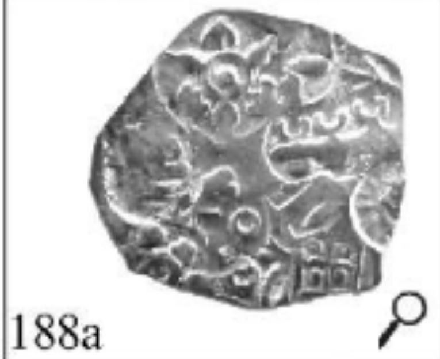
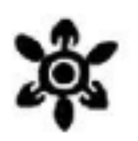
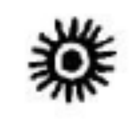
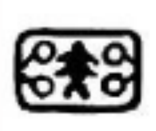
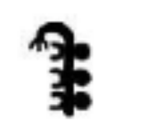
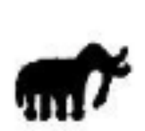
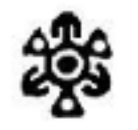
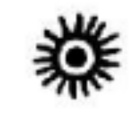
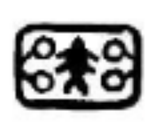
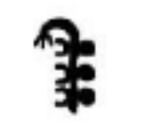
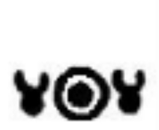
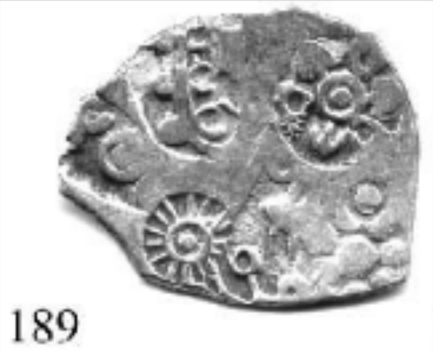
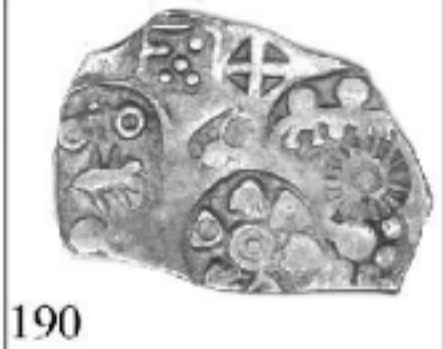
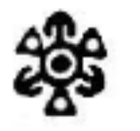
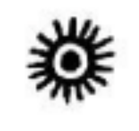
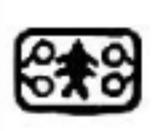
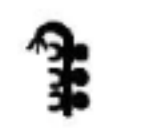
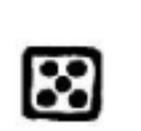
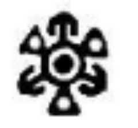
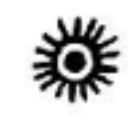
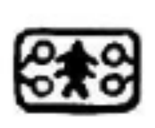
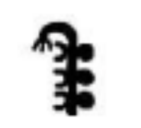
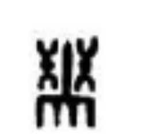
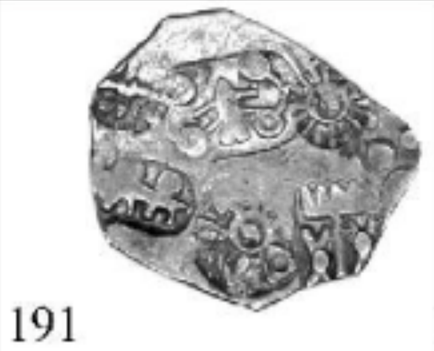
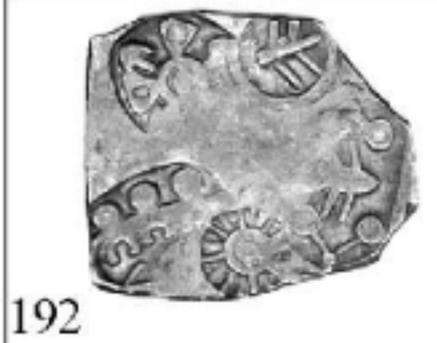
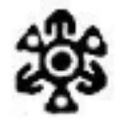
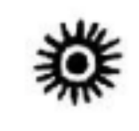
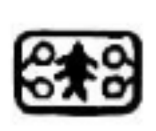
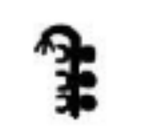
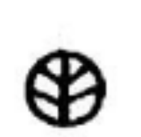
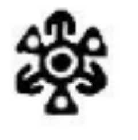
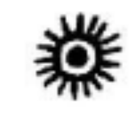
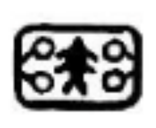
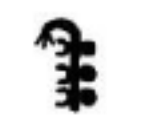
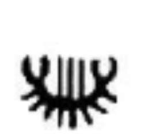
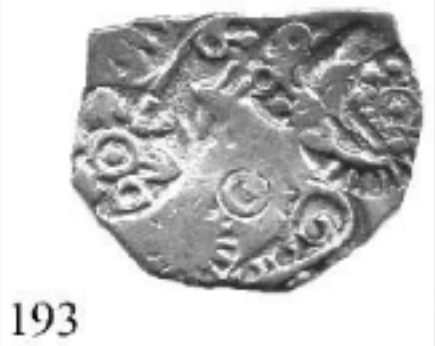
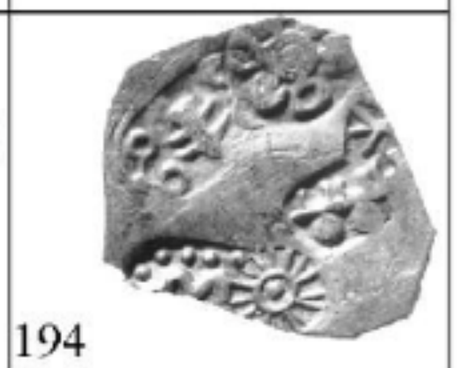
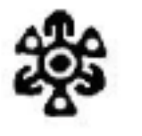
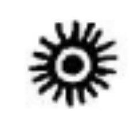
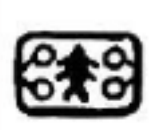
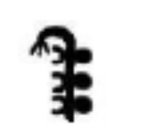
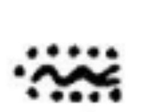
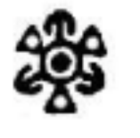
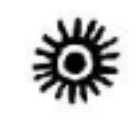
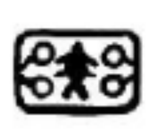
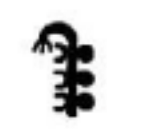
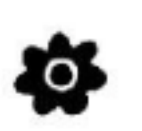
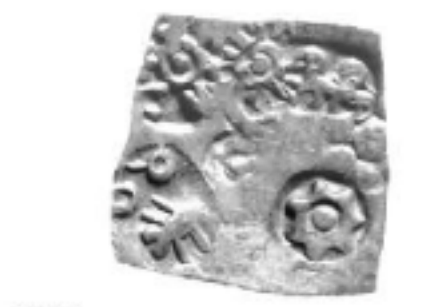
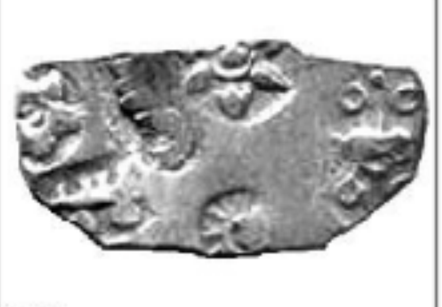
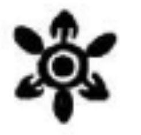
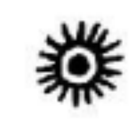
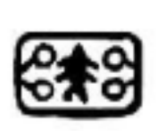
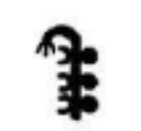
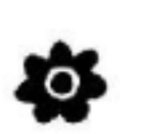
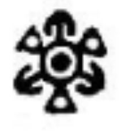
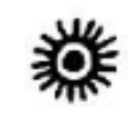
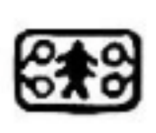
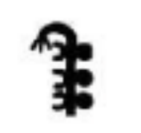
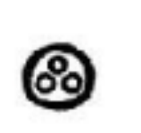
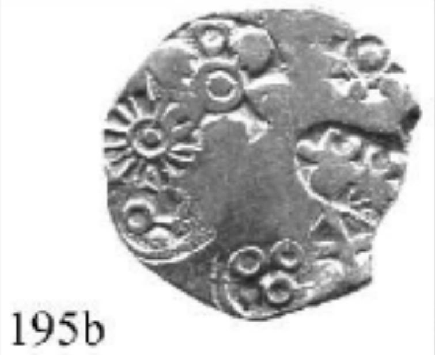
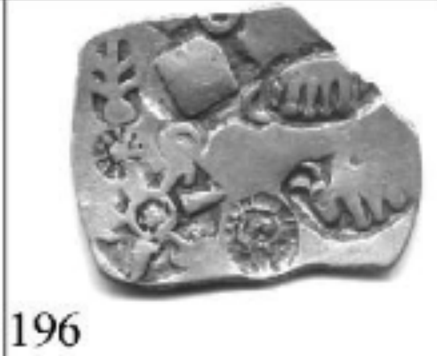
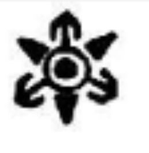
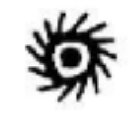
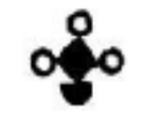
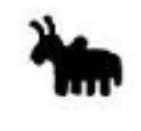
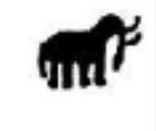
[1] The sole example (pictured) shows a plant-like symbol as the most likely fifth mark.

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 187 | I XXVI A 38<br>Aur, A |  |  |  |  |  |  187 |  187a |
| 187a | I XXVI A 58<br>SS |  |  |  |  |  | | |
| 188 | I XXVII A 1<br>Aur |  |  |  |  |  |  188 |  188a |
| 188a | I XXVII A 1∗[1]<br>A |  |  |  |  |  | | |
| 189 | I XXVII A 2<br>Aur, A |  |  |  |  |  |  189 |  190 |
| 190 | I XXVII A 4<br>Aur, BM |  |  |  |  |  | | |
| 191 | I XXVII A 28<br>Aur, BM |  |  |  |  |  |  191 |  192 |
| 192 | I XXVII A 29<br>Aur, BM |  |  |  |  |  | | |
| 193 | I XXVII A 30<br>Aur, A |  |  |  |  |  |  193 |  194 |
| 194 | I XXVII A 33<br>Aur, BM |  |  |  |  |  | | |
| 195 | I XXVII A 35<br>Aur, BM |  |  |  |  |  |  195 |  195a |
| 195a | I XXVII A 35∗[1]<br>AF |  |  |  |  |  | | |
| 195b | I XXVII A 37<br>PM |  |  |  |  |  |  195b |  196 |
| 196 | I XXVIII A 1<br>Aur, A |  |  |  |  |  | | |

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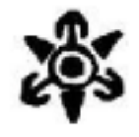
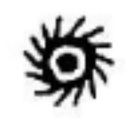
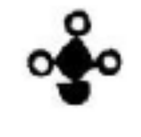
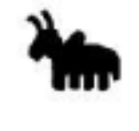
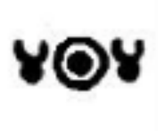
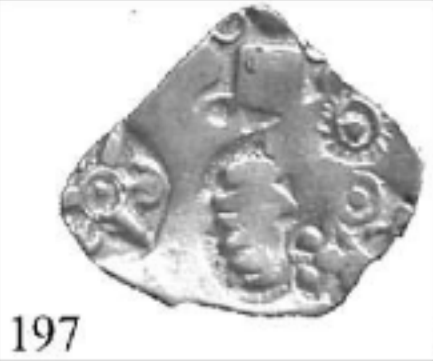
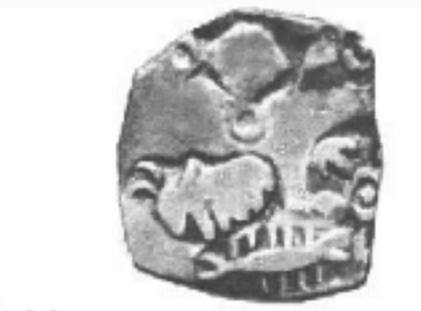
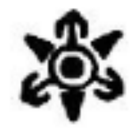
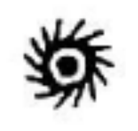
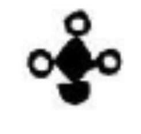
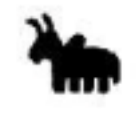
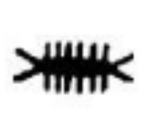
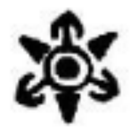
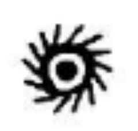
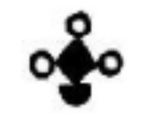
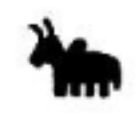
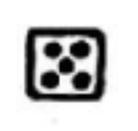
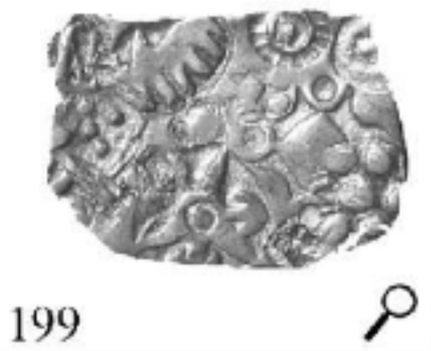
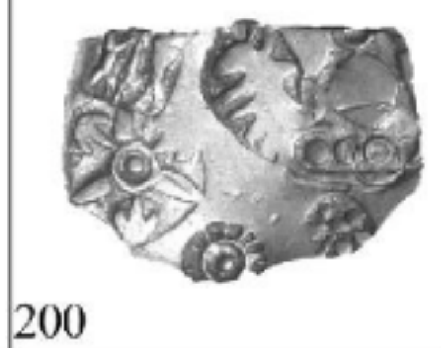
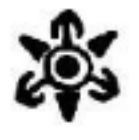
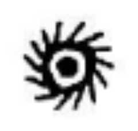
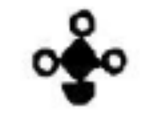
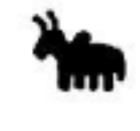
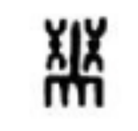
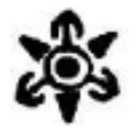
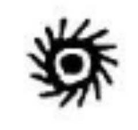
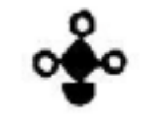
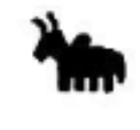
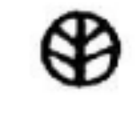
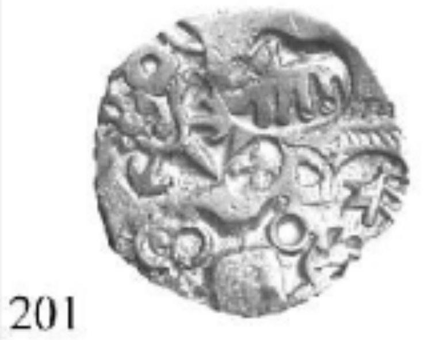
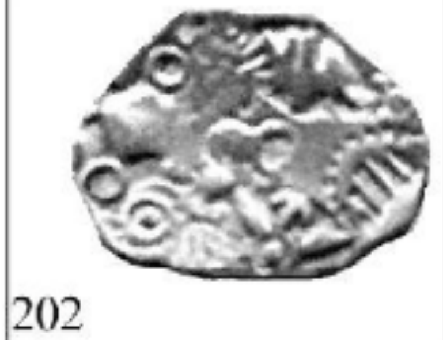
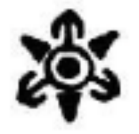
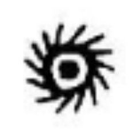
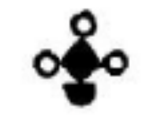
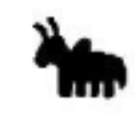
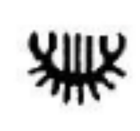
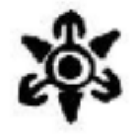
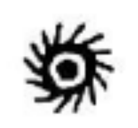
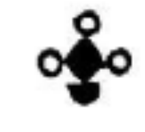
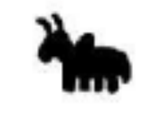
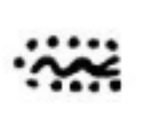
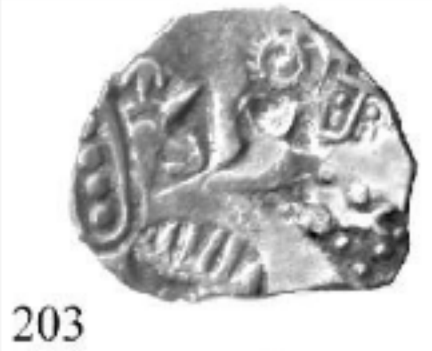
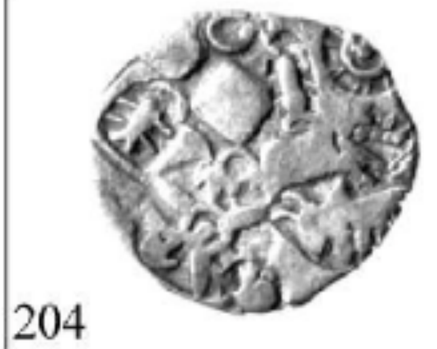
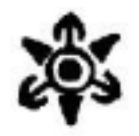
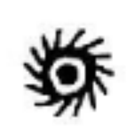
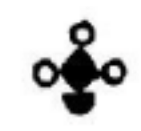
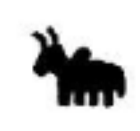
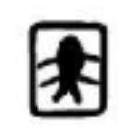
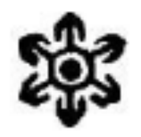
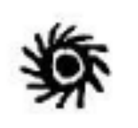
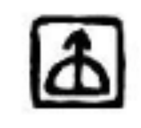
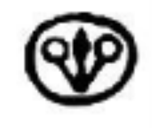
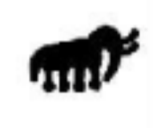
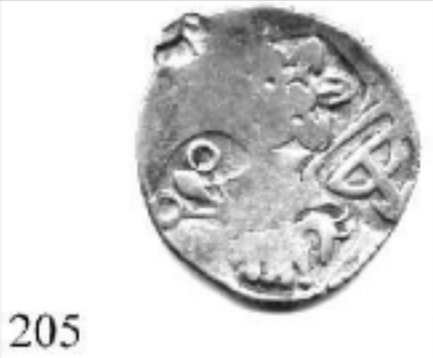
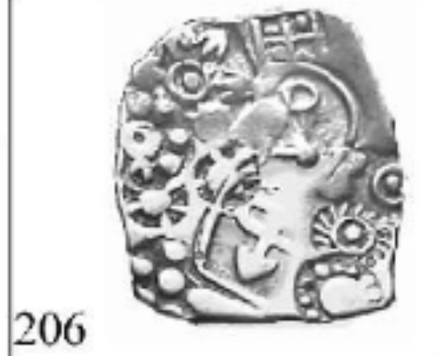
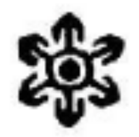
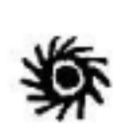
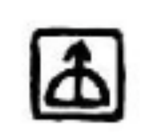
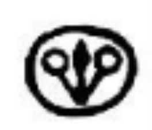
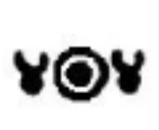
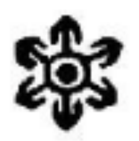
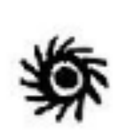
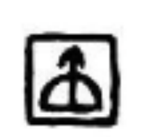
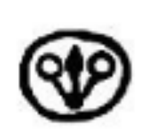
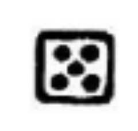
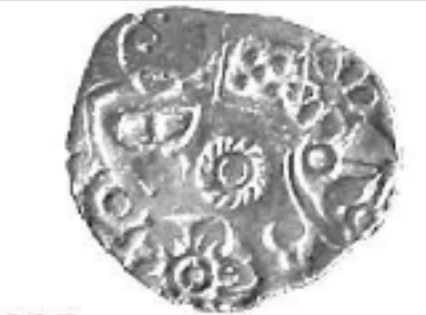
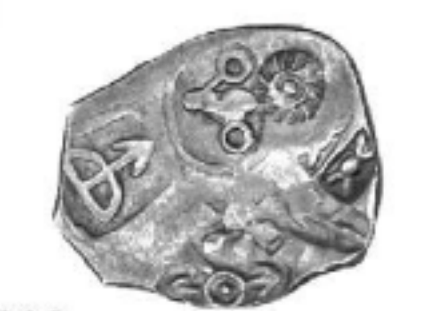
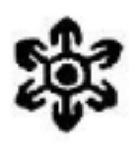
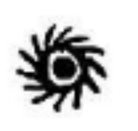
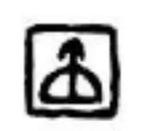
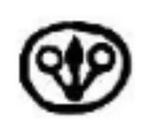
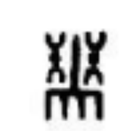
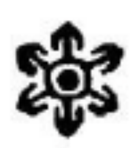
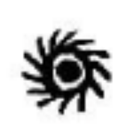
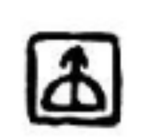
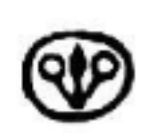
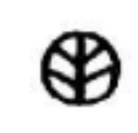
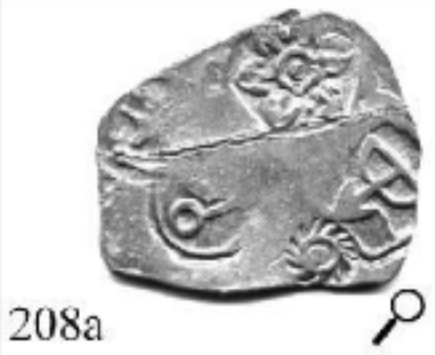
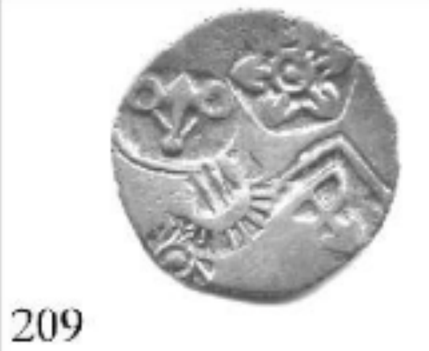
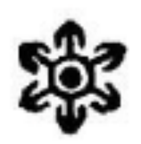
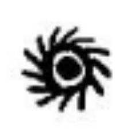
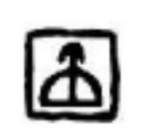
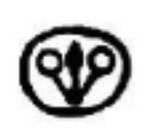
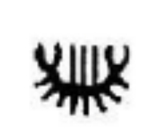
[1] Different six-armed symbol

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 197 | I XXVIII A 2<br>Aur, SS |  |  |  |  |  |  197 |  198 |
| 198 | I XXVIII A 3<br>Aur, A |  |  |  |  |  | | |
| 199 | I XXVIII A 4<br>Aur, PT |  |  |  |  |  |  199 |  200 |
| 200 | I XXVIII A 28<br>Aur, PT |  |  |  |  |  | | |
| 201 | I XXVIII A 29<br>Aur, PT |  |  |  |  |  |  201 |  202 |
| 202 | I XXVIII A 30<br>Aur, PK |  |  |  |  |  | | |
| 203 | I XXVIII A 33<br>Aur, PM |  |  |  |  |  |  203 |  204 |
| 204 | I XXVIII A 56<br>Aur, BKB, A |  |  |  |  |  | | |
| 205 | I XXIX A 1<br>Aur, RT |  |  |  |  |  |  205 |  206 |
| 206 | I XXIX A 2<br>Aur, BKB, SS |  |  |  |  |  | | |
| 207 | I XXIX A 4<br>Aur, SS |  |  |  |  |  |  207 |  208 |
| 208 | I XXIX A 28<br>Aur, RT |  |  |  |  |  | | |
| 208a | I XXIX A 29<br>A |  |  |  |  |  |  208a |  209 |
| 209 | I XXIX A 30<br>Aur, A |  |  |  |  |  | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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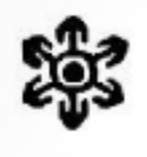
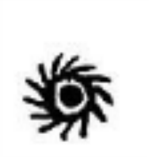
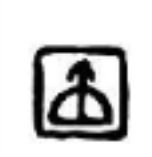
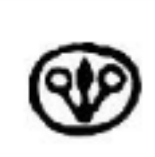
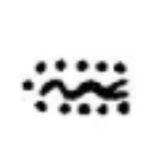
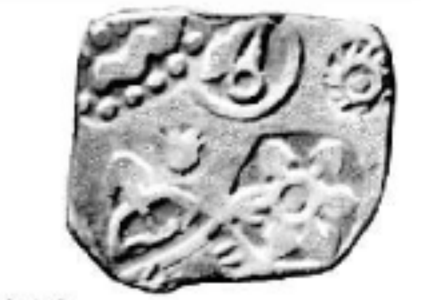
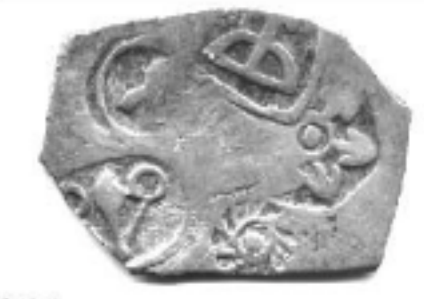
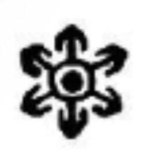
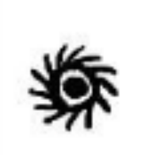
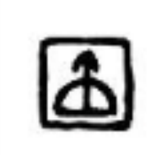
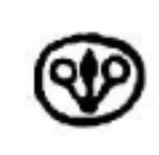
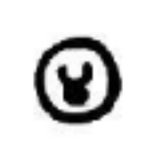
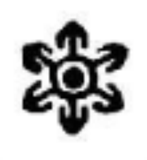
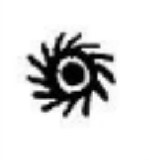
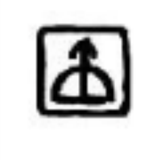
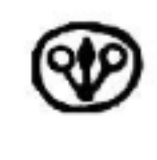
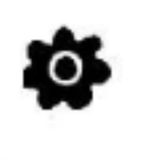
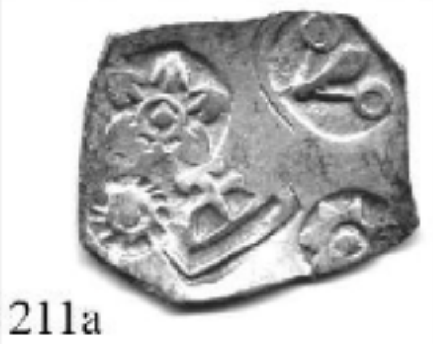
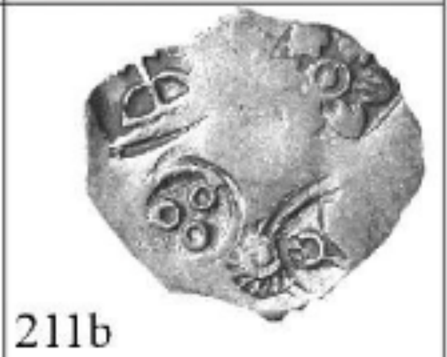
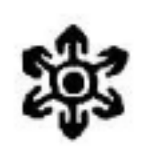
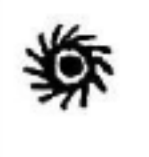
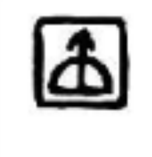
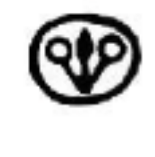
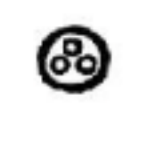
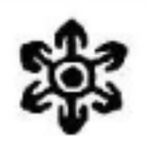
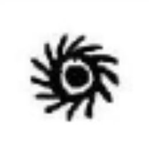
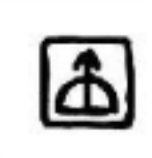
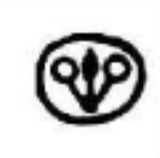
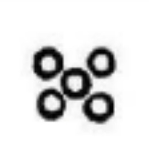
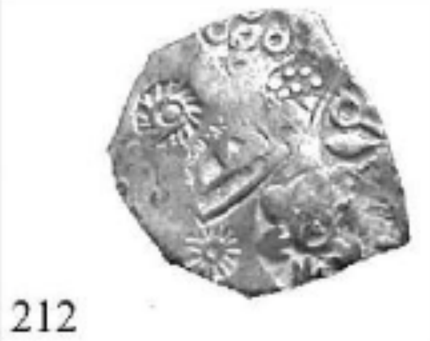
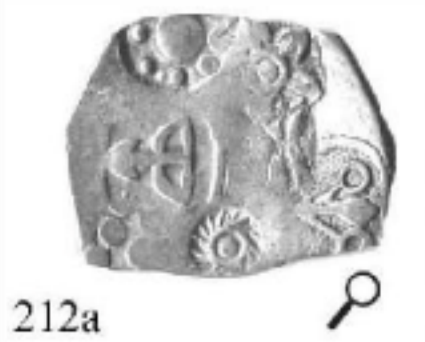
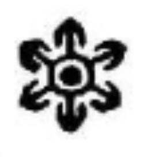
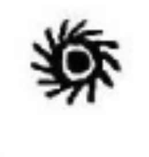
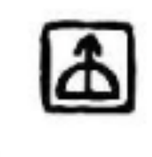
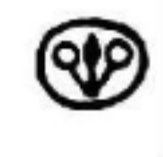
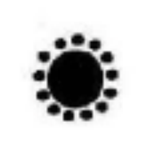
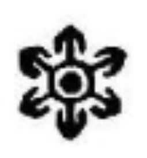
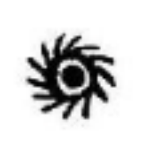
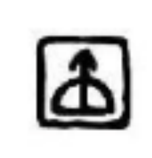
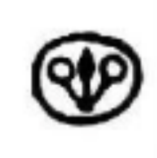
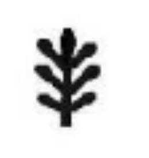
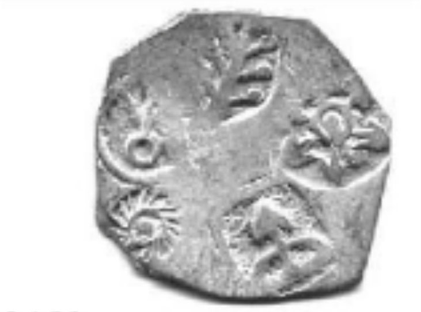
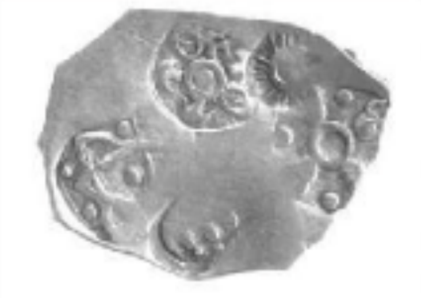
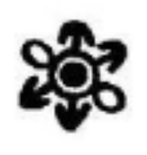
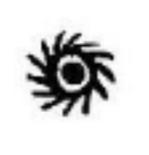
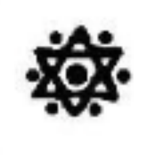
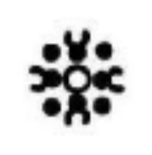
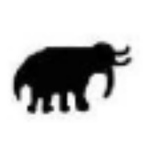
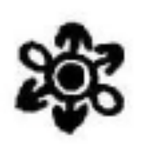
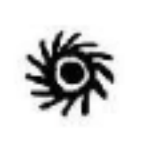
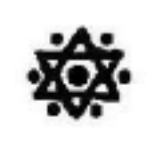
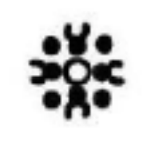
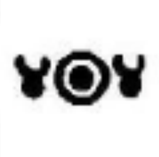
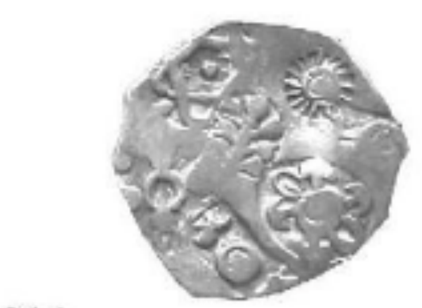
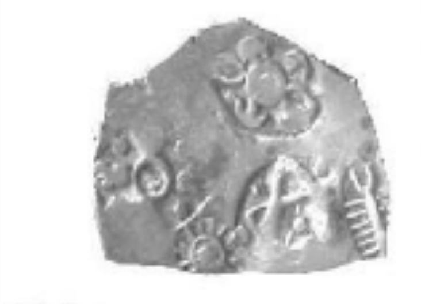
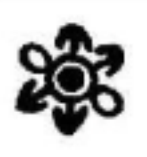
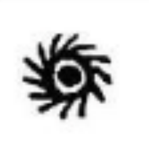
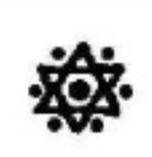
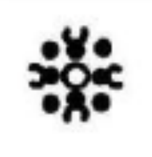
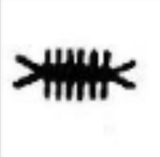
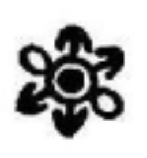
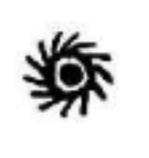
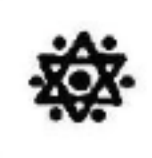
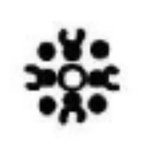
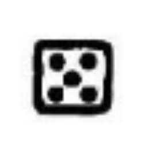
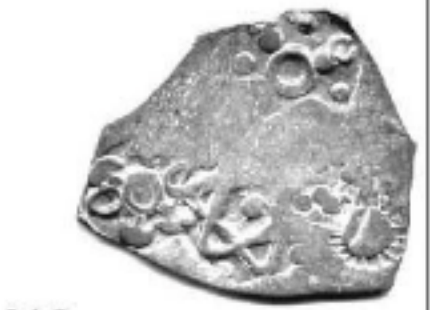
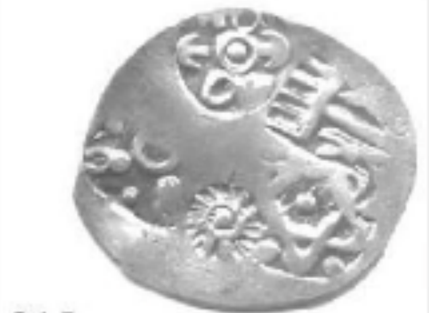
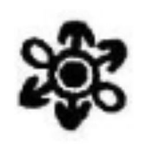
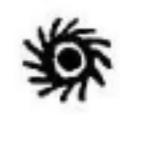
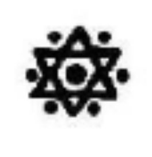
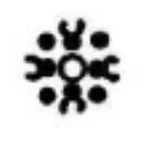
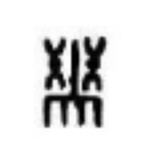
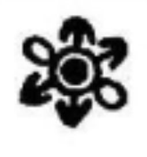
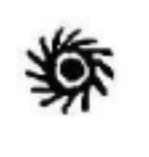
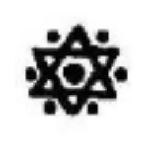
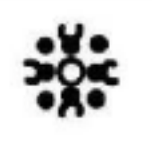
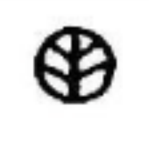
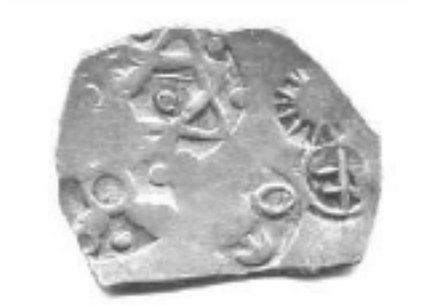
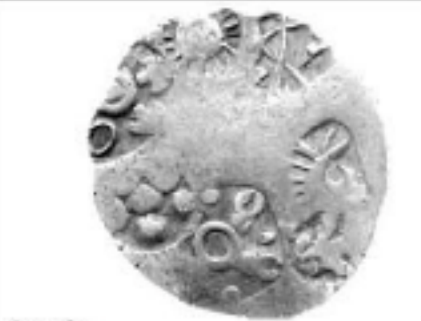
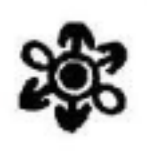
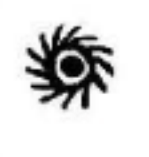
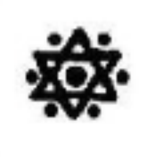
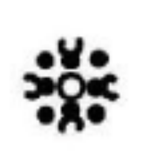
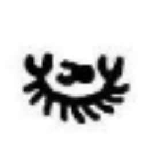
| | | 1 | 2 | 3 | 4 | 5 | | |
| 210 | I XXIX A 33<br>A |  |  |  |  |  |  210 |  211 |
| 211 | I XXIX A 34<br>Aur, A |  |  |  |  |  | | |
| 211a | I XXIX A 35<br>A |  |  |  |  |  |  211a |  211b |
| 211b | I XXIX A 37<br>PM |  |  |  |  |  | | |
| 212 | I XXIX A 38<br>Aur, SS |  |  |  |  |  |  212 |  212a |
| 212a | I XXIX A 39<br>A |  |  |  |  |  | | |
| 212b | I XXIX A 77<br>A |  |  |  |  |  |  212b |  213 |
| 213 | I XXX A 1<br>A |  |  |  |  |  | | |
| 214 | I XXX A 2<br>Jaun |  |  |  |  |  |  214 |  214a |
| 214a | I XXX A 3<br>SS |  |  |  |  |  | | |
| 215 | I XXX A 4<br>Aur |  |  |  |  |  |  215 |  215a |
| 215a | I XXX A 28<br>PM |  |  |  |  |  | | |
| 216 | I XXX A 29<br>A |  |  |  |  |  |  216 |  216a |
| 216a | I XXX A 31<br>PM |  |  |  |  |  | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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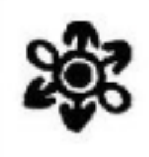
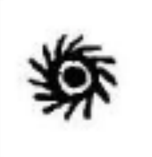
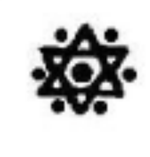
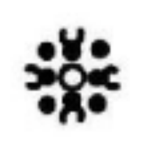
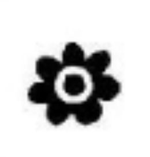
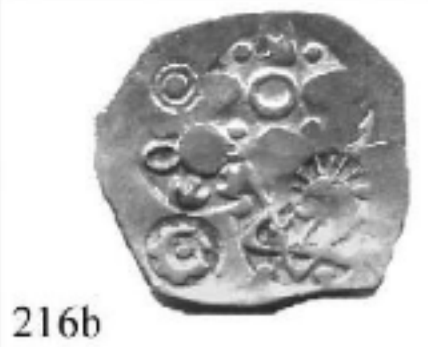
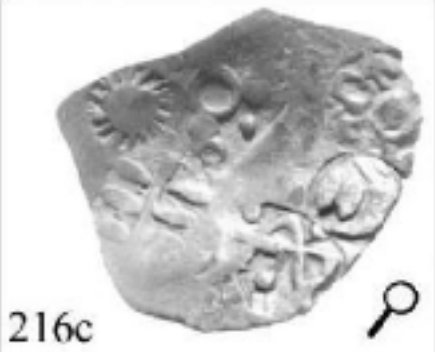
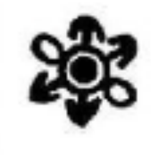
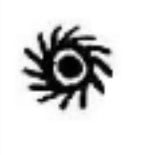
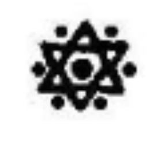
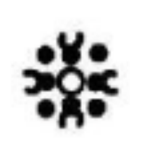
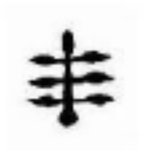
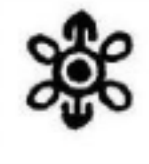
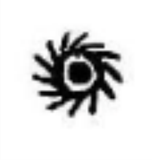
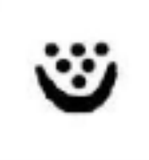
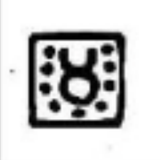
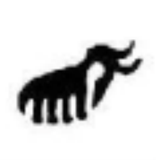
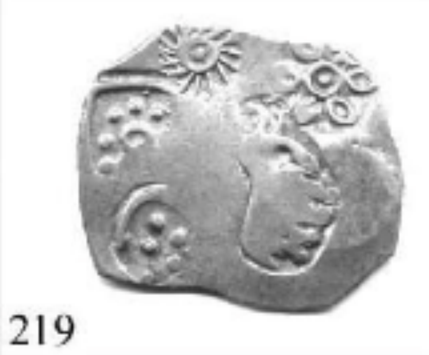
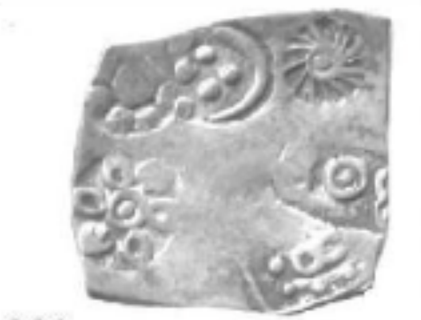
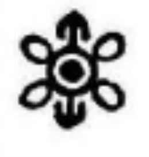
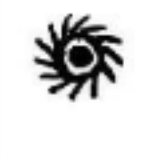
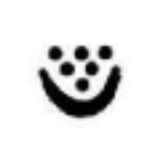
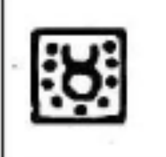
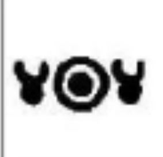
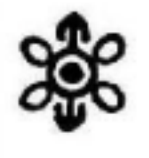
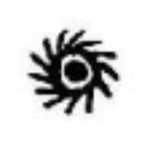
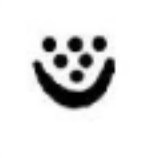
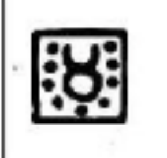
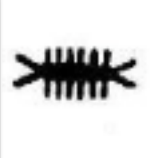
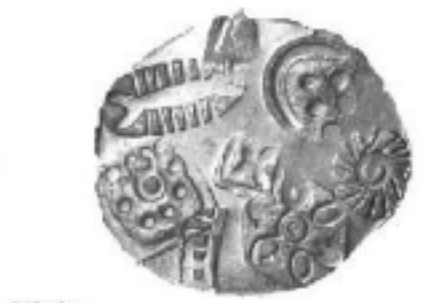
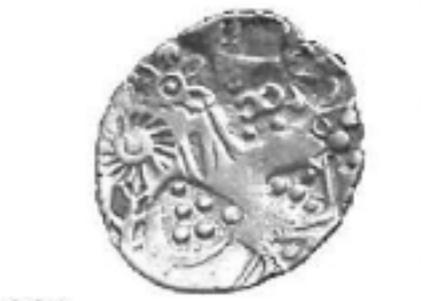
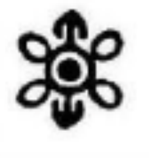
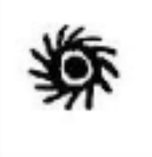
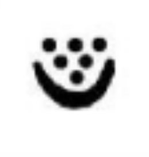
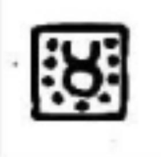
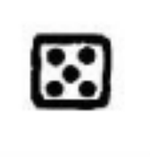
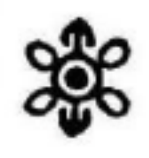
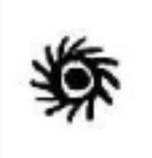
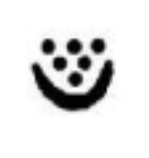
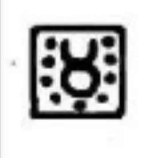
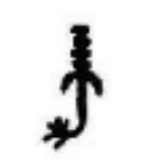
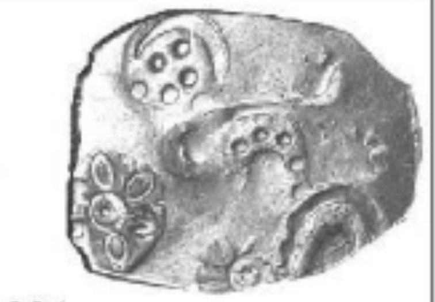
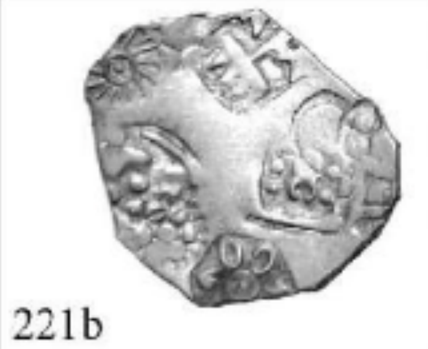
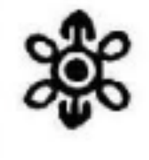
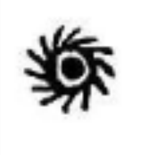
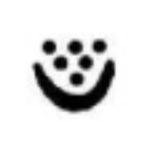
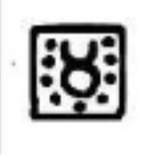
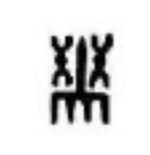
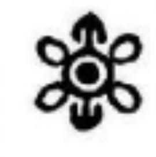
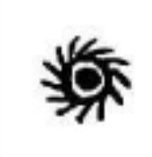
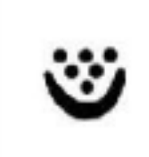
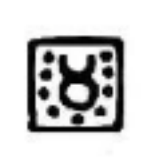
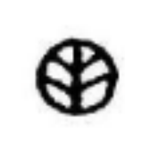
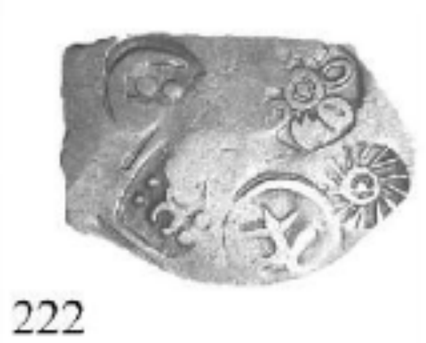
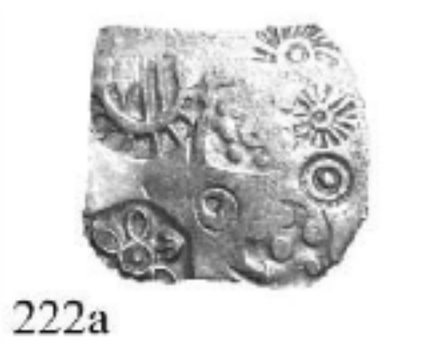
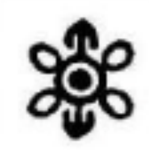
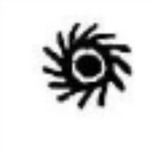
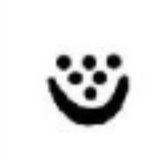
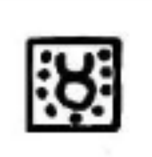
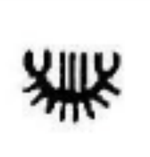
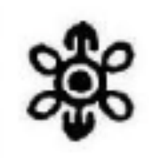
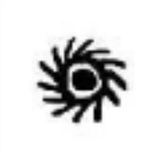
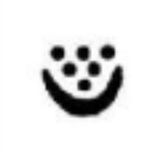
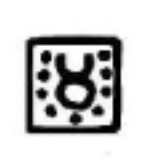
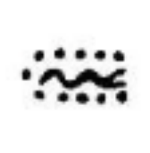
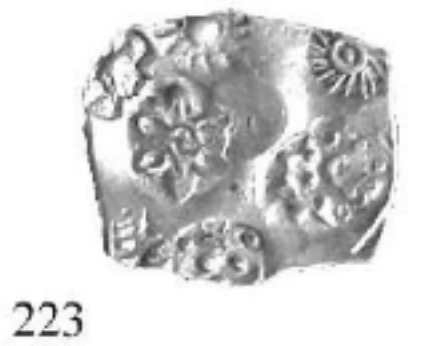
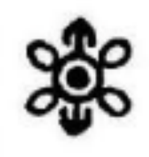
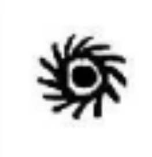
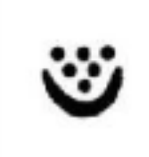
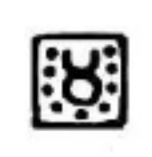
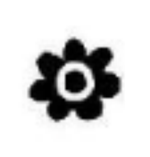
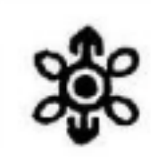
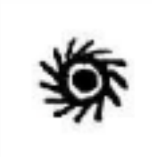
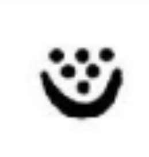
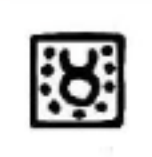
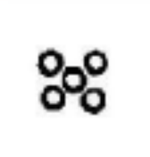
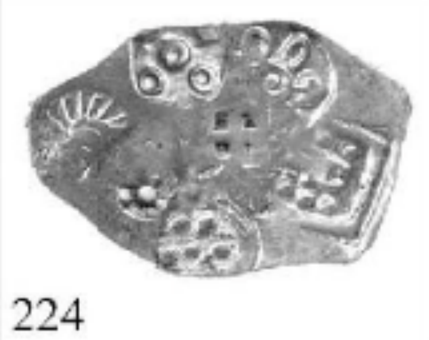
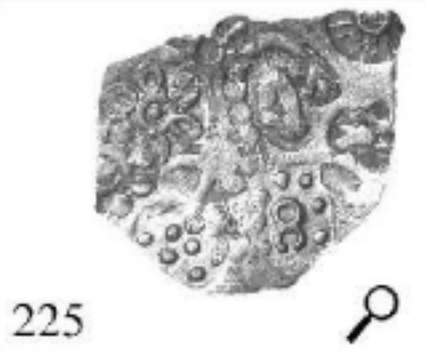
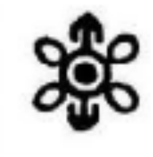
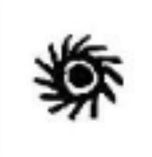
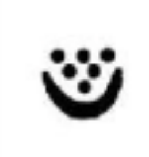
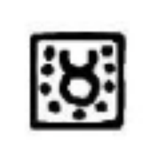
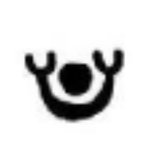
| 216b | I XXX A 35<br>PM, AF |  |  |  |  |  |  216b |  216c |
| 216c | I XXX A 279<br>BM |  |  |  |  |  | | |
| [1] 219 | I XXXI A 1<br>Aur |  |  |  |  |  |  219 |  220 |
| 220 | I XXXI A 2<br>Aur |  |  |  |  |  | | |
| 220a | I XXXI A 3<br>SS |  |  |  |  |  |  220a |  221 |
| 221 | I XXXI A 4<br>Aur |  |  |  |  |  | | |
| 221a | I XXXI A 6<br>PT |  |  |  |  |  |  221a |  221b |
| 221b | I XXXI A 28<br>RT |  |  |  |  |  | | |
| 222 | I XXXI A 29<br>Aur |  |  |  |  |  |  222 |  222a |
| 222a | I XXXI A 30<br>PT |  |  |  |  |  | | |
| 222b | I XXXI A 33<br>RT |  |  |  |  |  | no image available<br>222b |  223 |
| 223 | I XXXI A 35<br>Aur |  |  |  |  |  | | |
| 224 | I XXXI A 38<br>Aur |  |  |  |  |  |  224 |  225 |
| 225 | I XXXI A 74<br>Aur |  |  |  |  |  | | |

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[1] Types 217-218 are transferred to I IV D

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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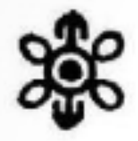
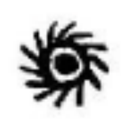
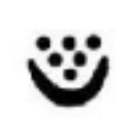
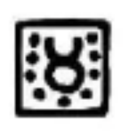
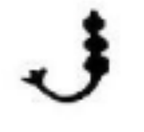
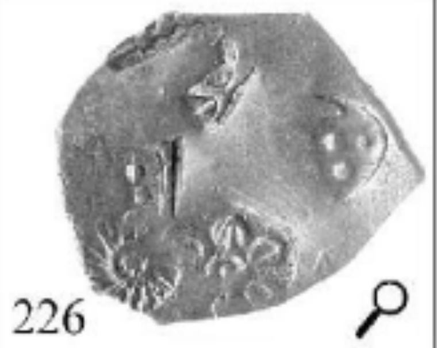
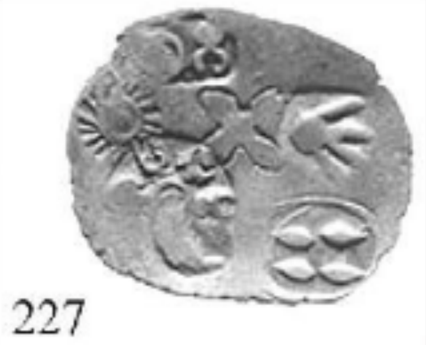
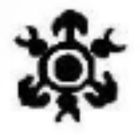
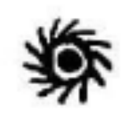
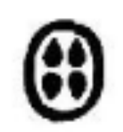
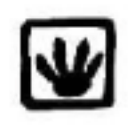
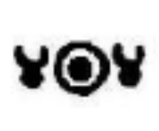
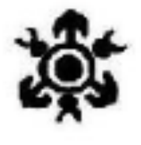
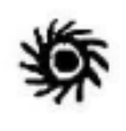
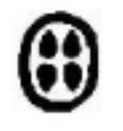
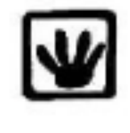
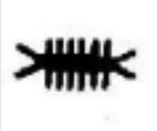
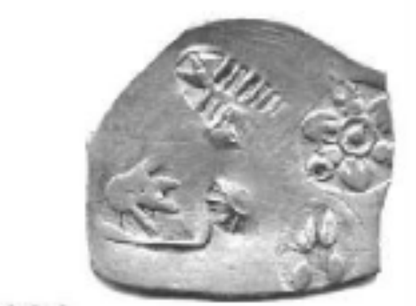
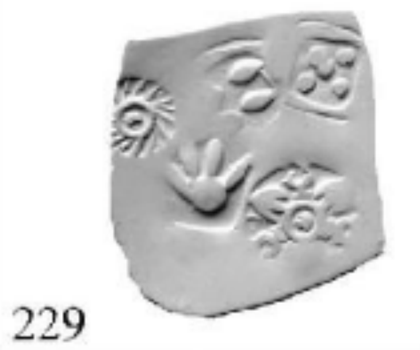
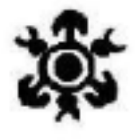
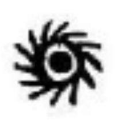
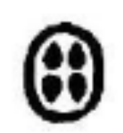
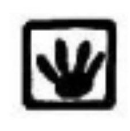
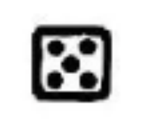
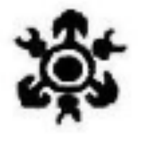
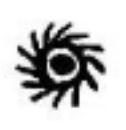
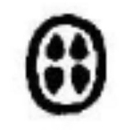
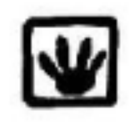
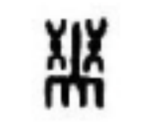
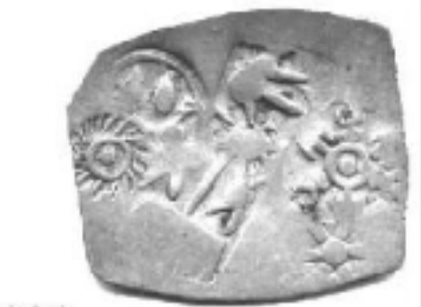
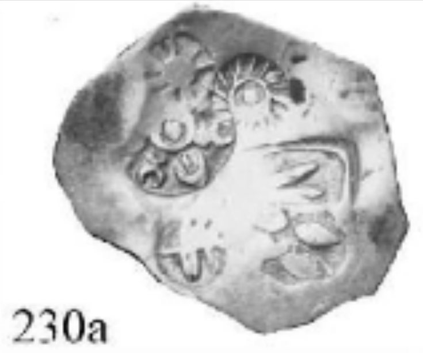
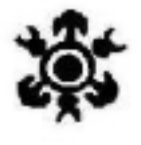
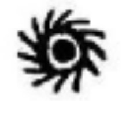
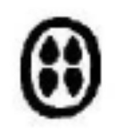
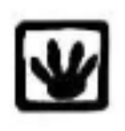
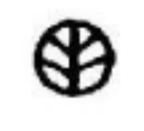
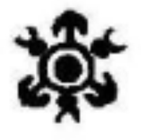
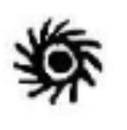
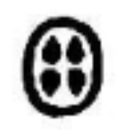
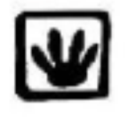
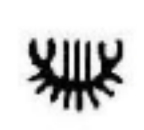
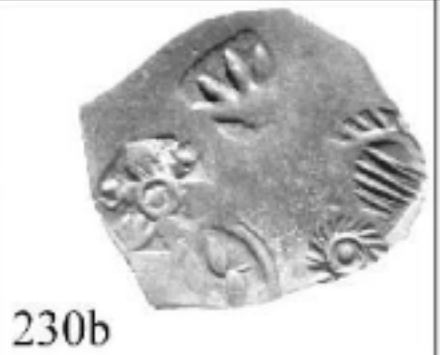
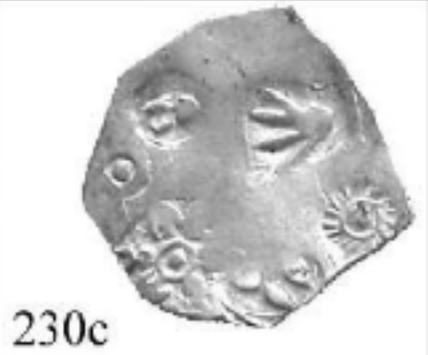
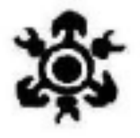
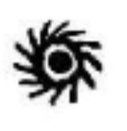
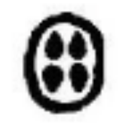
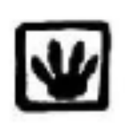
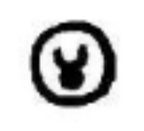
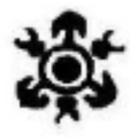
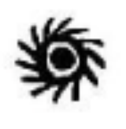
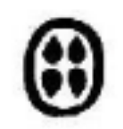
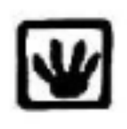
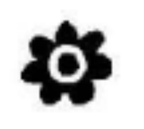
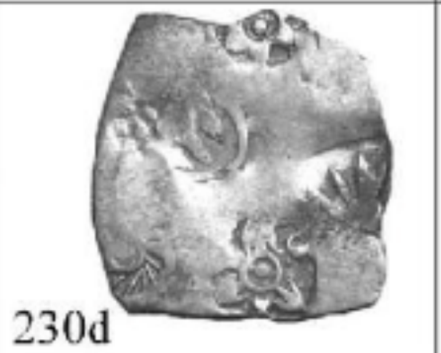
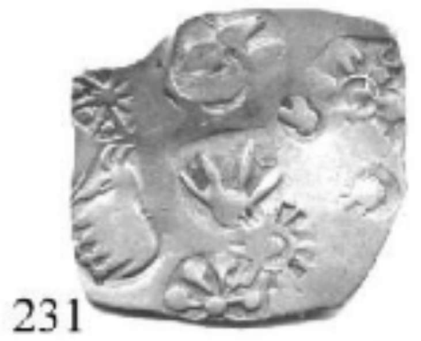
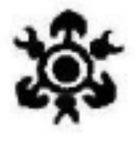
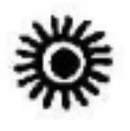
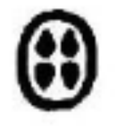
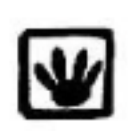
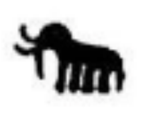
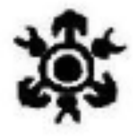
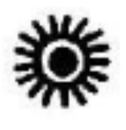
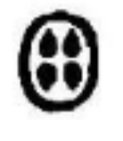
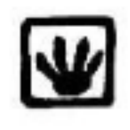
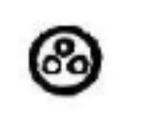
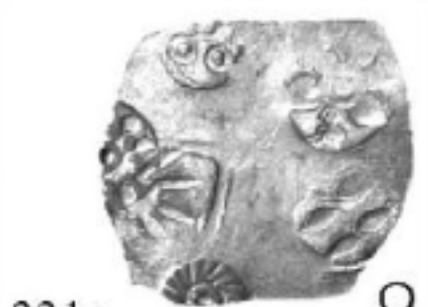
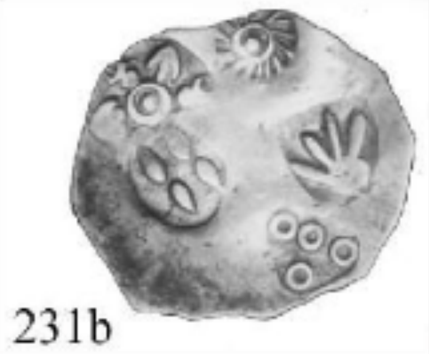
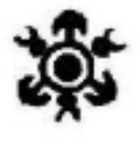
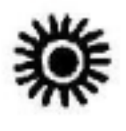
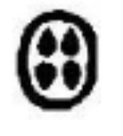
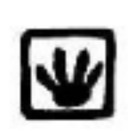
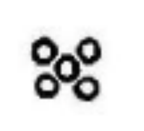
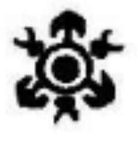
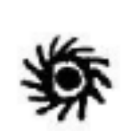
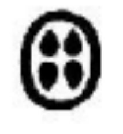
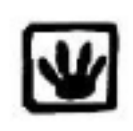
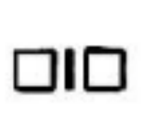
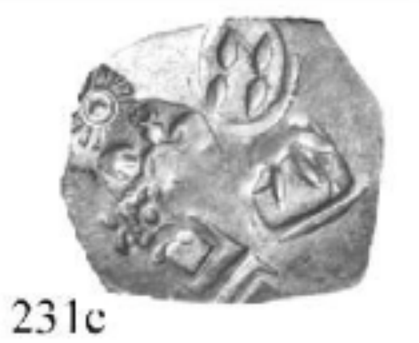
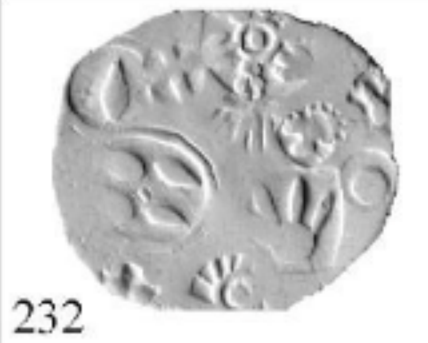
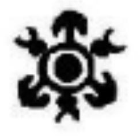
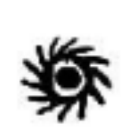
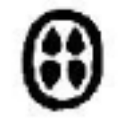
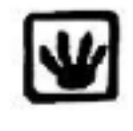
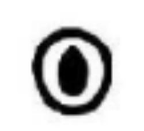
| 226 | I XXXI A 75<br>Aur |  |  |  |  |  |  226 |  227 |
| 227 | I XXXII A 2<br>Aur, Jaun |  |  |  |  |  | | |
| 228 | I XXXII A 3<br>A |  |  |  |  |  |  228 |  229 |
| 229 | I XXXII A 4<br>A |  |  |  |  |  | | |
| 230 | I XXXII A 28<br>Jaun |  |  |  |  |  |  230 |  230a |
| 230a | I XXXII A 29<br>LD |  |  |  |  |  | | |
| 230b | I XXXII A 30<br>PT |  |  |  |  |  |  230b |  230c |
| 230c | I XXXII A34<br>SS |  |  |  |  |  | | |
| 230d | I XXXII A 35<br>SS |  |  |  |  |  |  230d |  231 |
| 231 | I XXXII A 36<br>Aur, Jaun |  |  |  |  |  | | |
| 231a | I XXXII A 37<br>PT |  |  |  |  |  |  231a |  231b |
| 231b | I XXXII A 38<br>LD |  |  |  |  |  | | |
| 231c | I XXXII A 42<br>PT |  |  |  |  |  |  231c |  232 |
| 232 | I XXXII A 45<br>A |  |  |  |  |  | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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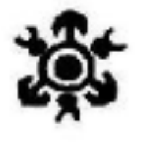
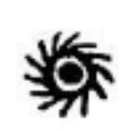
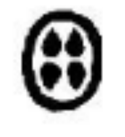
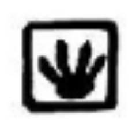
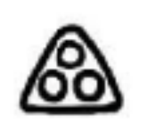
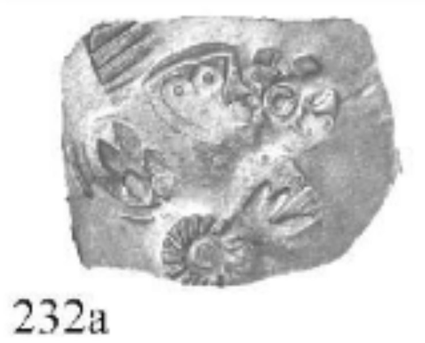
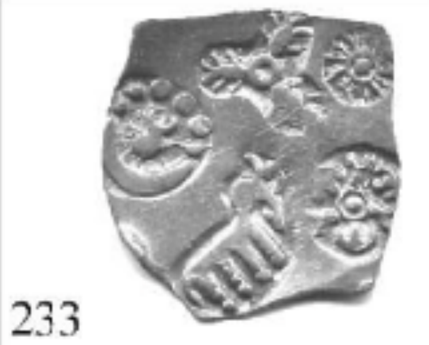
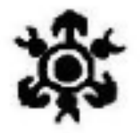
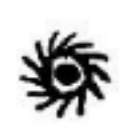
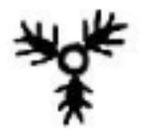
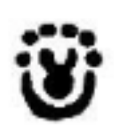
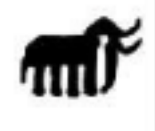
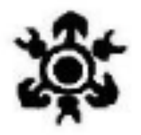
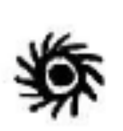
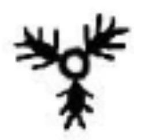
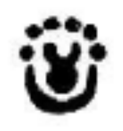
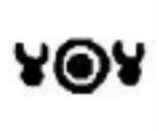
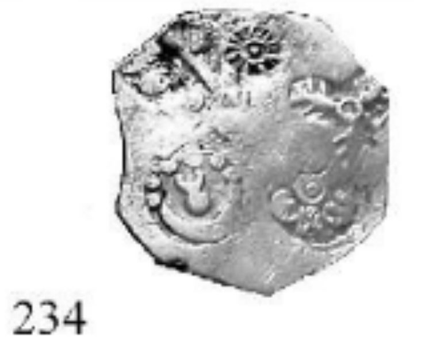
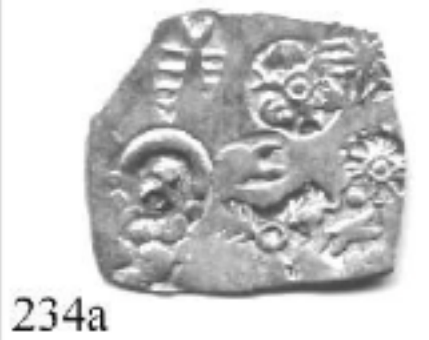
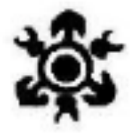
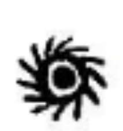
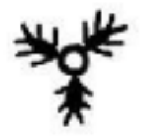
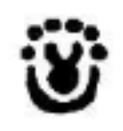
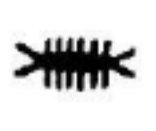
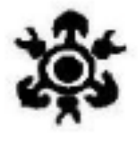
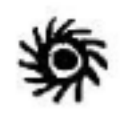
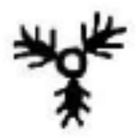
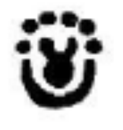
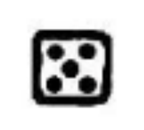
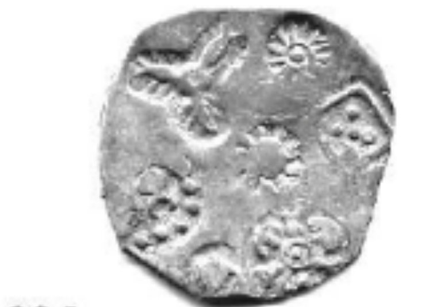
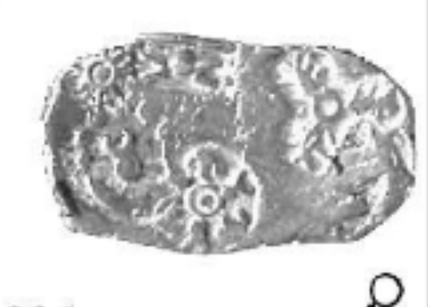
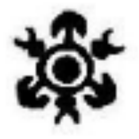
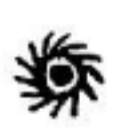
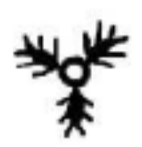
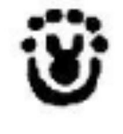
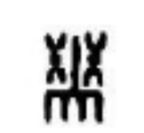
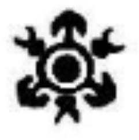
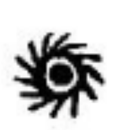
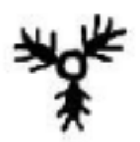
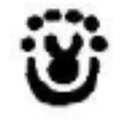
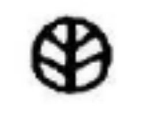
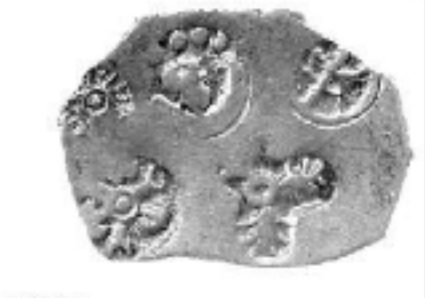
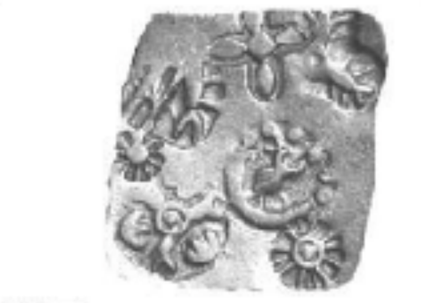
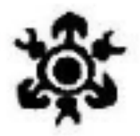
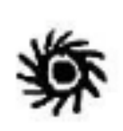
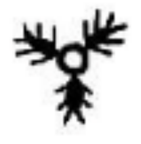
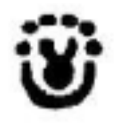
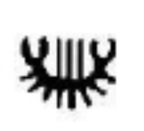
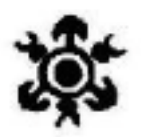
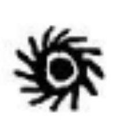
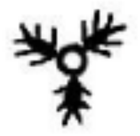
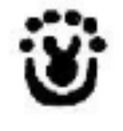
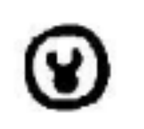
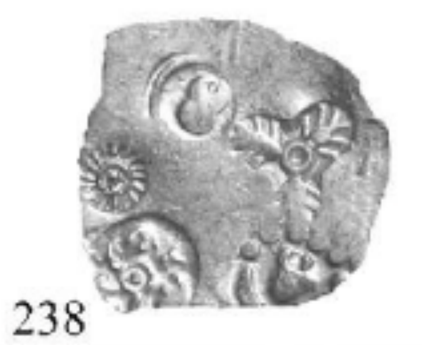
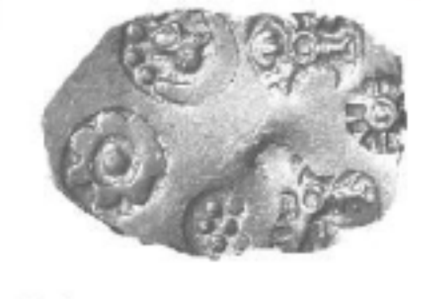
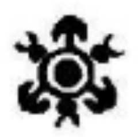
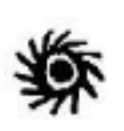
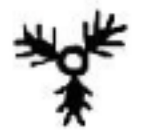
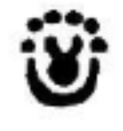
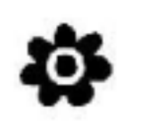
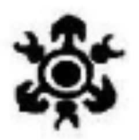
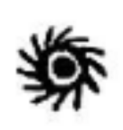
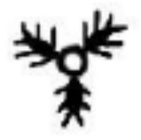
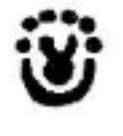
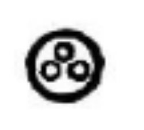
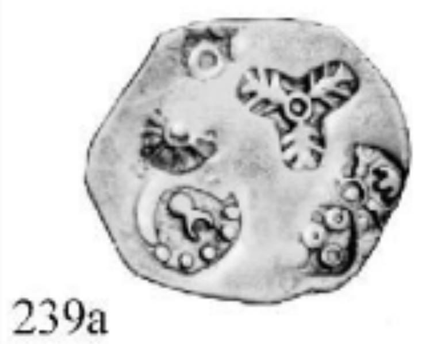
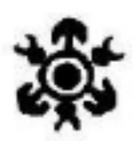
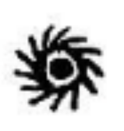
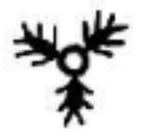
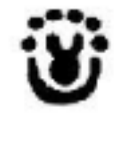
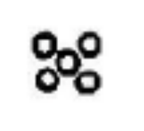
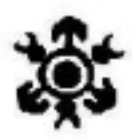
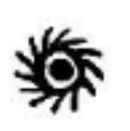
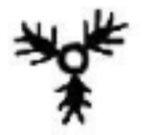
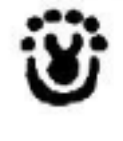
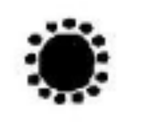
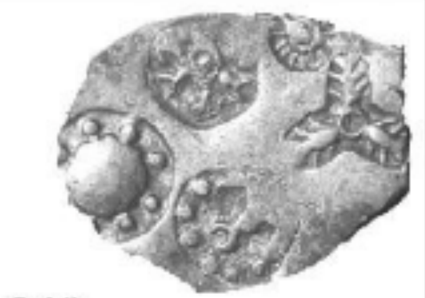
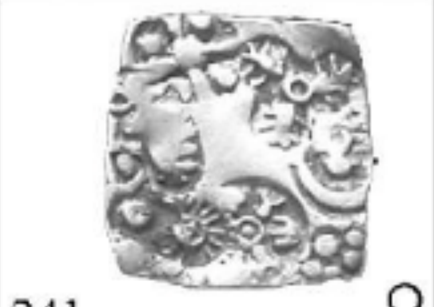
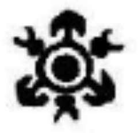
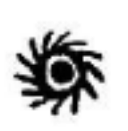
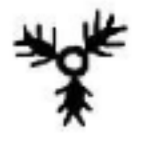
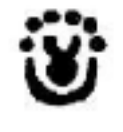
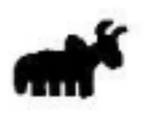
| 232a | I XXXII A 531<br>PT |  |  |  |  |  |  232a |  233 |
| 233 | I XXXIII A 1<br>Aur, BKB |  |  |  |  |  | | |
| 234 | I XXXIII A 2<br>Aur, BKB |  |  |  |  |  |  234 |  234a |
| 234a | I XXXIII A 3<br>SH |  |  |  |  |  | | |
| 235 | I XXXIII A 4<br>Aur |  |  |  |  |  |  235 |  236 |
| 236 | I XXXIII A 28<br>Aur |  |  |  |  |  | | |
| 237 | I XXXIII A 29<br>Aur |  |  |  |  |  |  237 |  237a |
| 237a | I XXXIII A 30<br>PT |  |  |  |  |  | | |
| 238 | I XXXIII A 34<br>Aur |  |  |  |  |  |  238 |  238a |
| 238a | I XXXIII A 35<br>SH |  |  |  |  |  | | |
| 239 | I XXXIII A 37<br>Aur |  |  |  |  |  | no image available<br>239 |  239a |
| 239a | I XXXIII A 38<br>LD |  |  |  |  |  | | |
| 240 | I XXXIII A 39<br>Aur |  |  |  |  |  |  240 |  241 |
| 241 | I XXXIII A 58<br>Aur |  |  |  |  |  | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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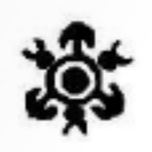
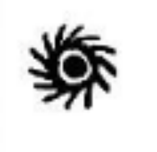
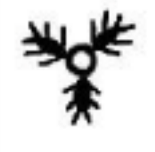
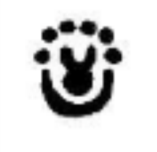
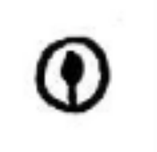
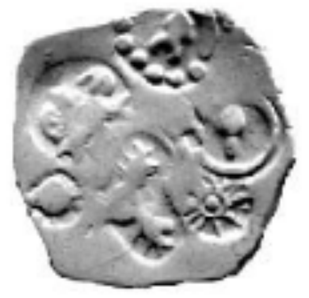
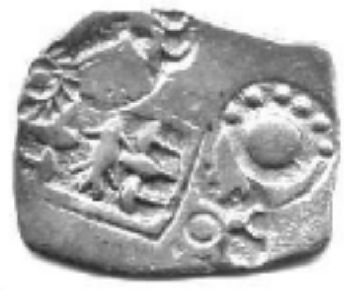
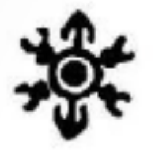
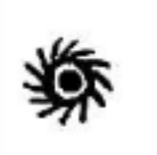
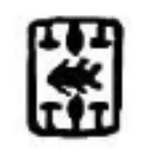
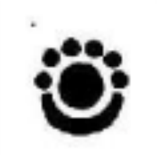
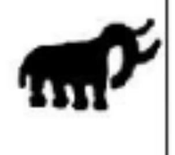
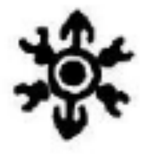
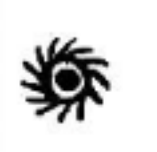
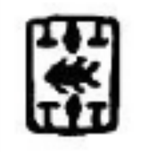
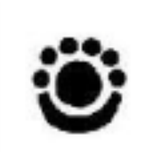
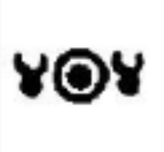
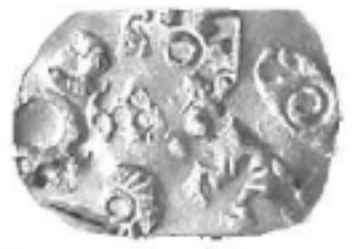
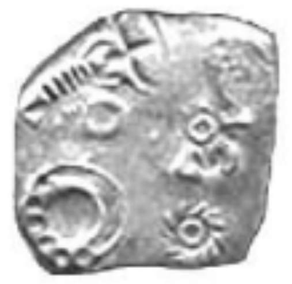
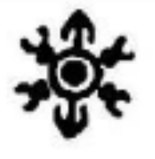
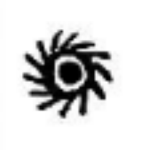
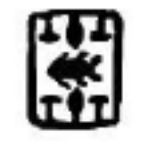
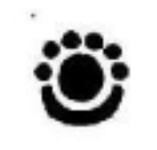
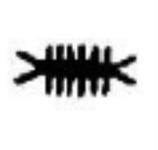
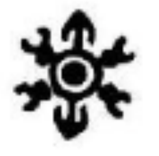
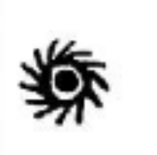
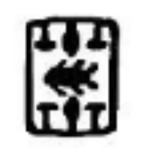
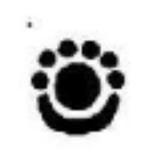
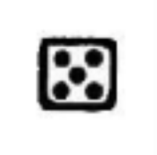
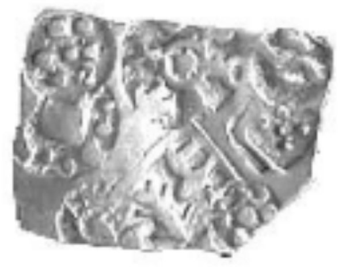
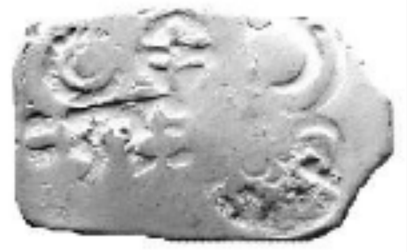
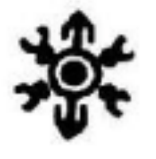
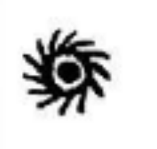
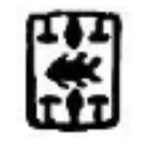
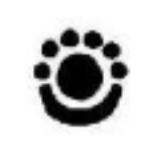
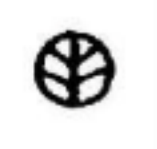
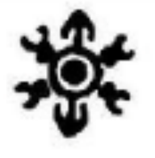
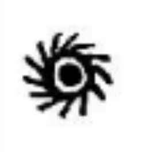
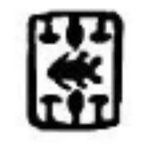
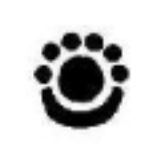
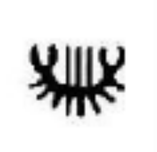
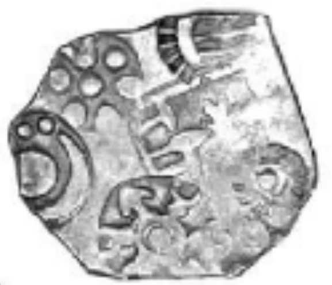
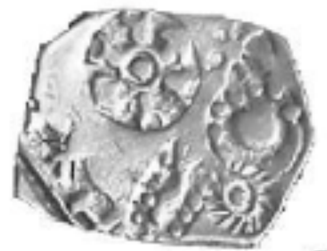
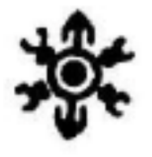
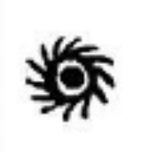
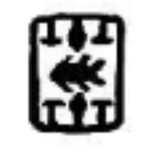
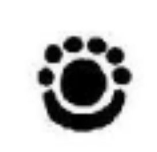
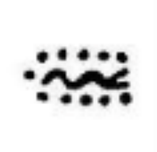
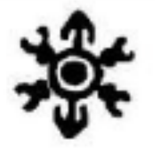
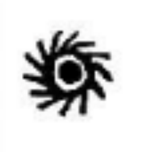
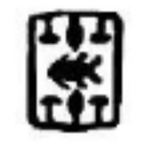
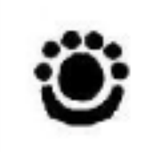
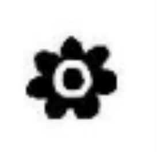
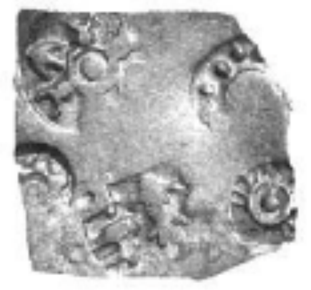
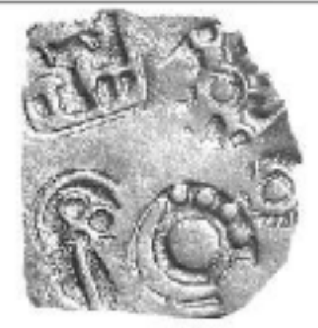
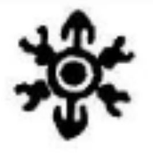
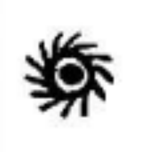
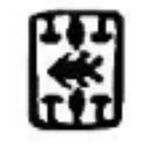
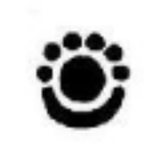
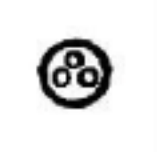
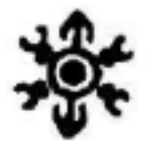
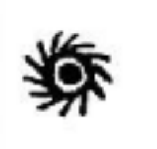
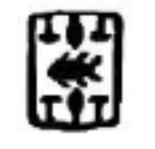
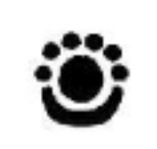
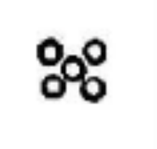
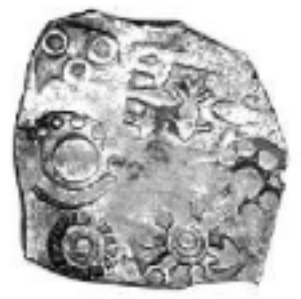
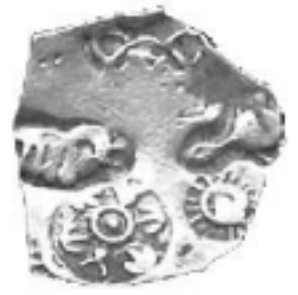
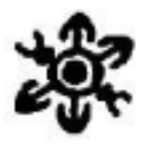
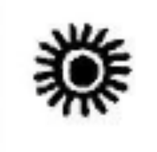
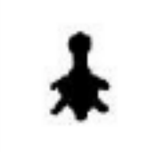
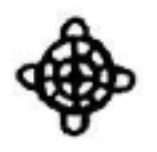
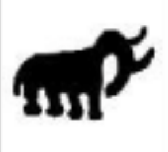
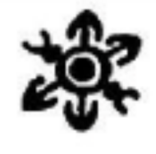
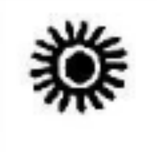
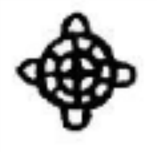
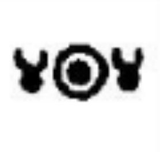
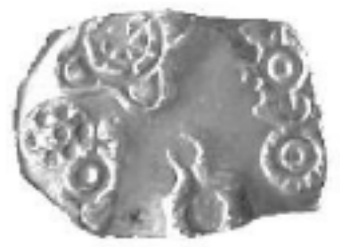
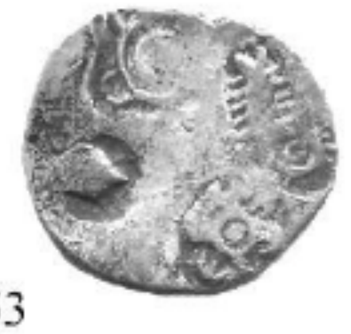
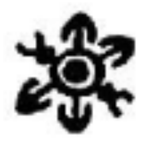
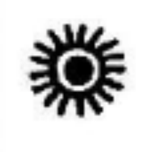
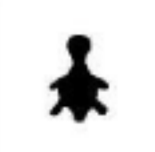
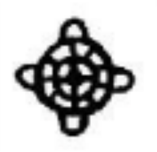
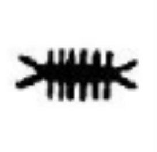
| 242 | I XXXIII A 76<br>A |  |  |  |  |  | <br>242 | <br>243 |
| 243 | I XXXIV A 1<br>Aur |  |  |  |  |  | | |
| 244 | I XXXIV A 2<br>Aur |  |  |  |  |  | <br>244 | <br>244a |
| 244a | I XXXIV A 3<br>PK |  |  |  |  |  | | |
| 245 | I XXXIV A 4<br>Aur |  |  |  |  |  | <br>245 | <br>246 |
| 246 | I XXXIV A 29<br>A |  |  |  |  |  | | |
| 247 | I XXXIV A 30<br>Aur |  |  |  |  |  | <br>247 | <br>247a |
| 247a | I XXXIV A 33<br>SS |  |  |  |  |  | | |
| 248 | I XXXIV A 35<br>Aur |  |  |  |  |  | <br>248 | <br>249 |
| 249 | I XXXIV A 37<br>Aur |  |  |  |  |  | | |
| 250 | I XXXIV A 38<br>Aur |  |  |  |  |  | <br>250 | <br>251 |
| 251 | I XXXV A 1<br>Aur |  |  |  |  |  | | |
| 252 | I XXXV A 2<br>Aur |  |  | |  |  | <br>252 | <br>253 |
| 253 | I XXXV A 3<br>Aur |  |  |  |  |  | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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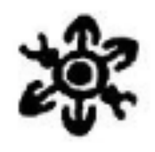
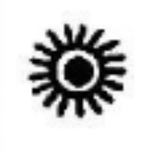
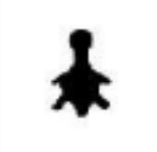
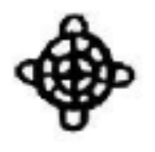
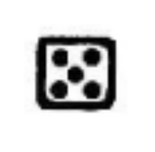
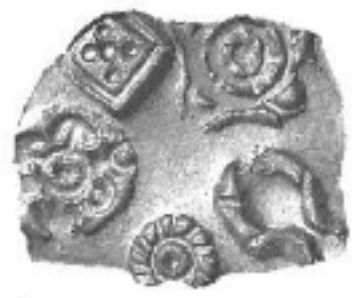
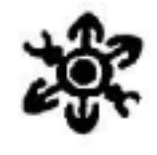
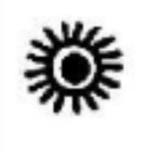
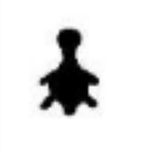
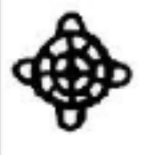
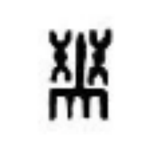
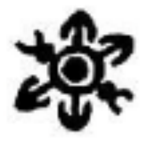
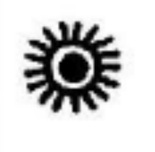
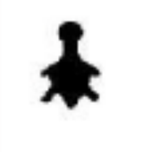
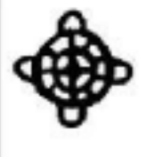
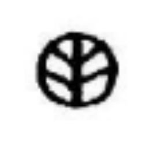
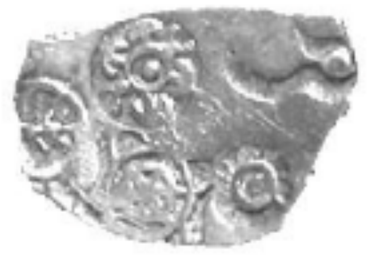
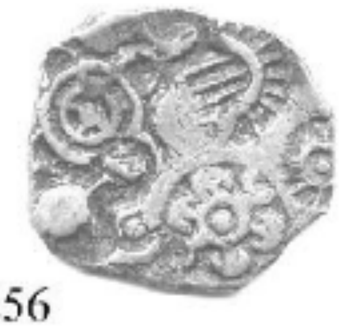
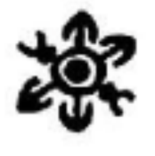
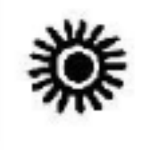
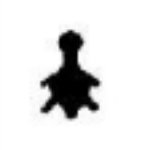
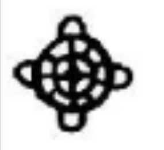
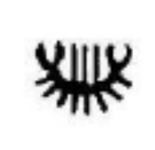
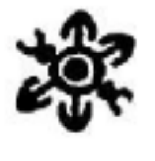
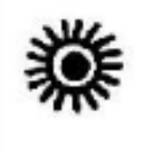
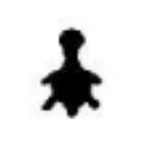
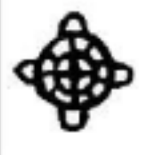
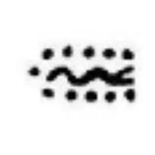
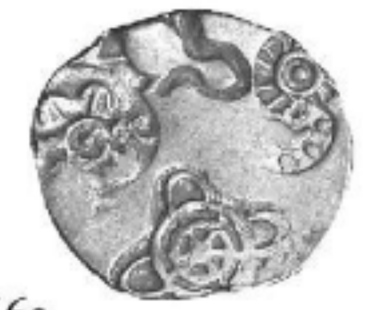
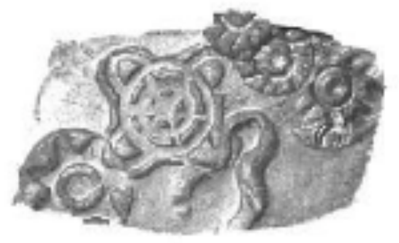
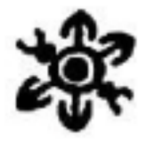
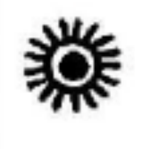
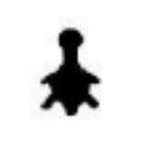
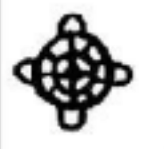
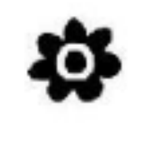
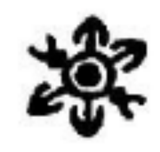
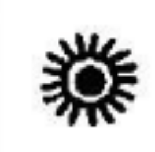
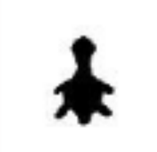
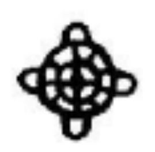
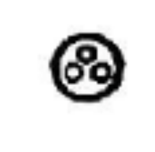
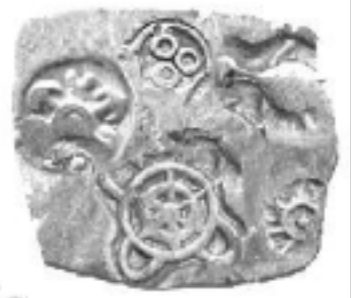
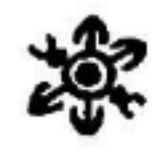
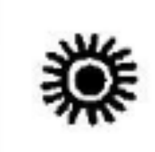
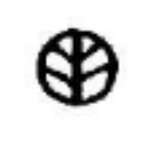
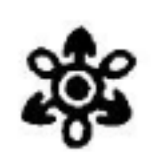
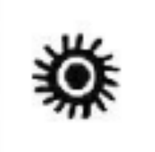
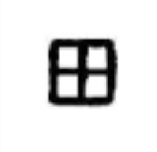
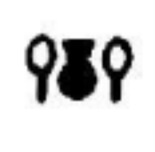
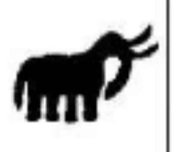
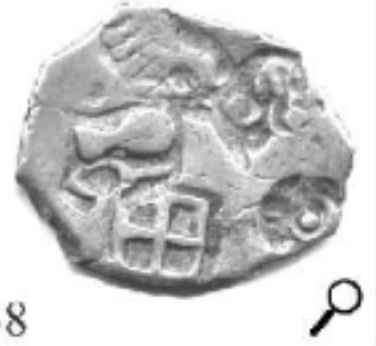
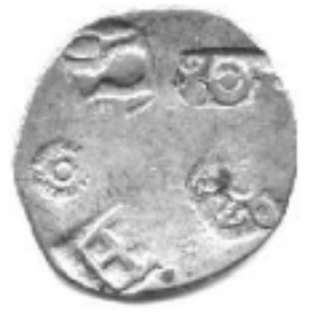
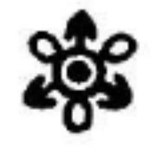
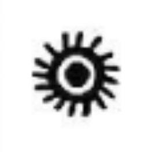
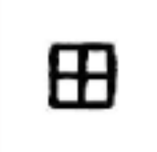
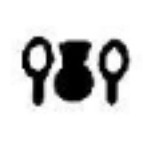
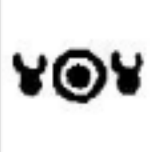
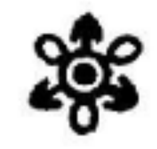
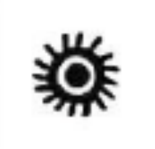
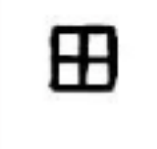
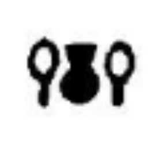
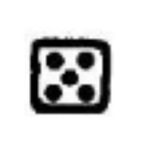
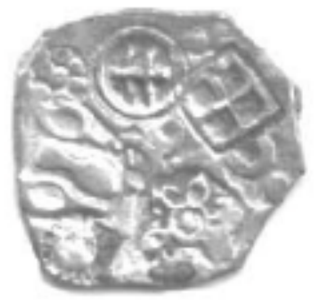
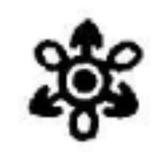
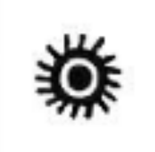
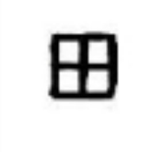
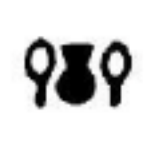
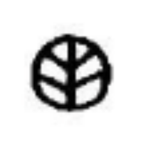
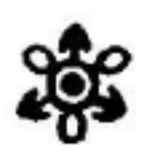
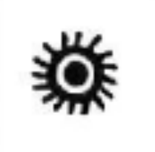
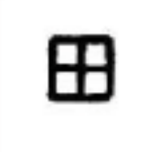
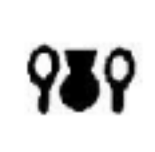
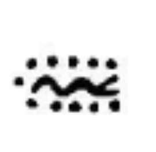
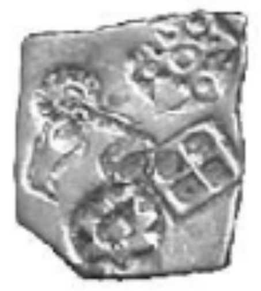
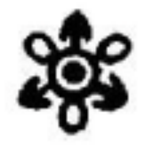
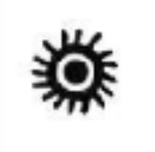
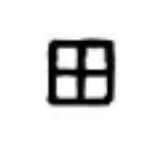
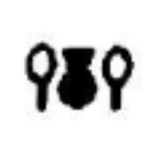
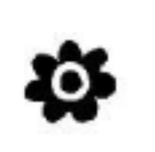
| 253a | I XXXV A 4<br>PM; SS (JNSI 2005) |  |  |  |  |  | <br>253a | no image available<br>254 |
| 254 | I XXXV A 28<br>Aur |  |  |  |  |  | | |
| 255 | I XXXV A 29<br>Aur |  |  |  |  |  | <br>255 | <br>256 |
| 256 | I XXXV A 30<br>A |  |  |  |  |  | | |
| 256a | I XXXV A 33<br>PT |  |  |  |  |  | <br>256a | <br>256b |
| 256b | I XXXV A 35<br>SS |  |  |  |  |  | | |
| 256c | I XXXV A 37<br>PK |  |  |  |  |  | <br>256c | no image available<br>257 |
| 257 | I XXXV B 29<br>Aur |  |  | | |  | | |
| 258 | I XXXVI A 1<br>Aur |  |  |  |  |  | <br>258 | <br>259 |
| 259 | I XXXVI A 2<br>Aur, BKB |  |  |  |  |  | | |
| 260 | I XXXVI A 4<br>Aur |  |  |  |  |  | no image available<br>260 | <br>261 |
| 261 | I XXXVI A 29<br>Aur |  |  |  |  |  | | |
| 262 | I XXXVI A 33<br>Aur |  |  |  |  |  | no image available<br>262 | <br>262a |
| 262a | I XXXVI A 35<br>SS |  |  |  |  |  | | |

## SERIES I Catalogue contd.

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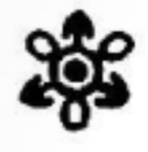
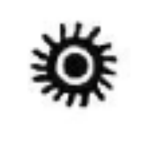
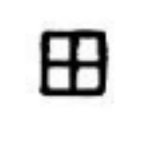
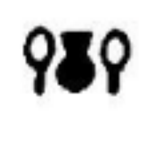
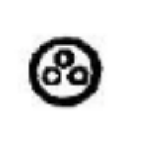
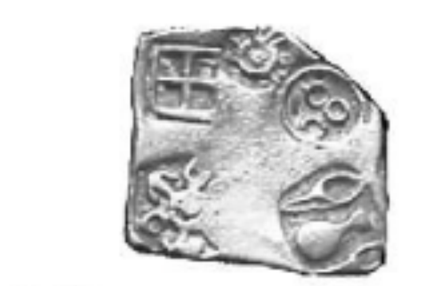
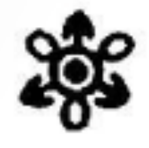
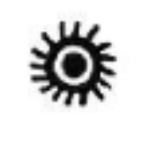
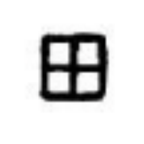
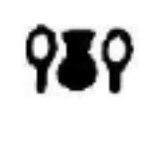
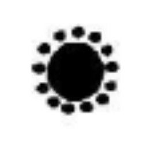
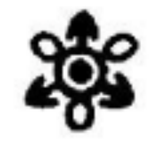
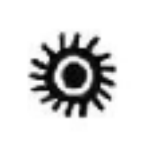
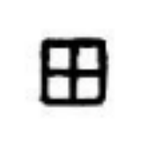
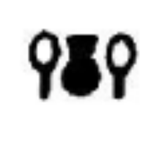
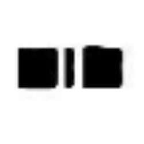
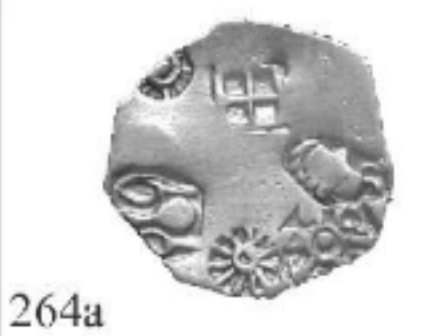
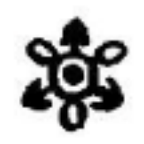
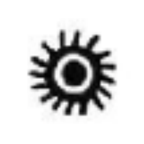
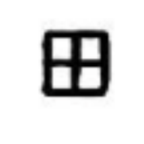
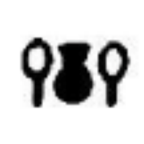
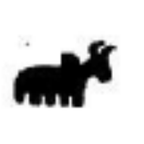
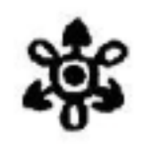
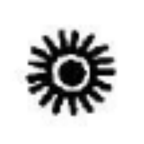
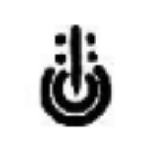
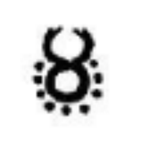
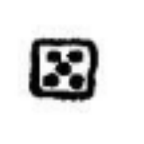
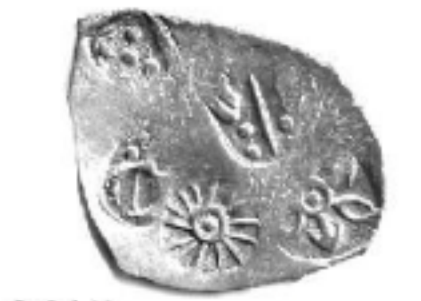
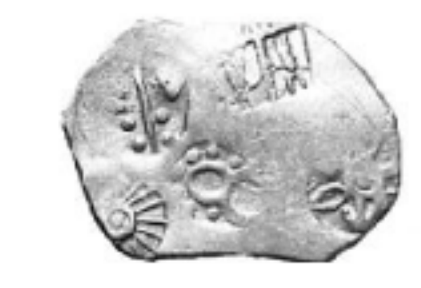
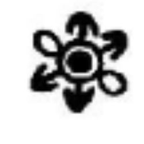
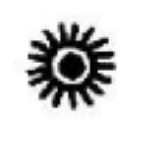
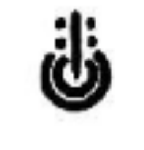
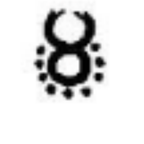
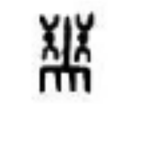
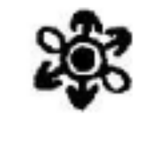
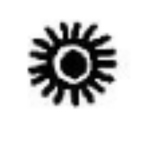
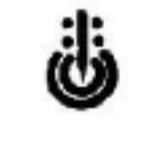
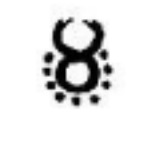
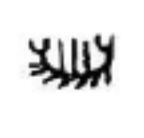
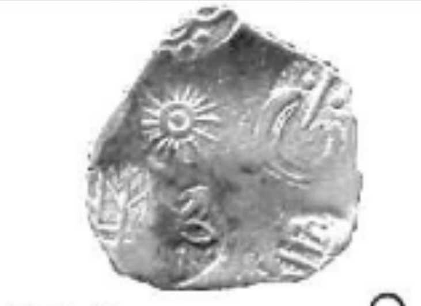
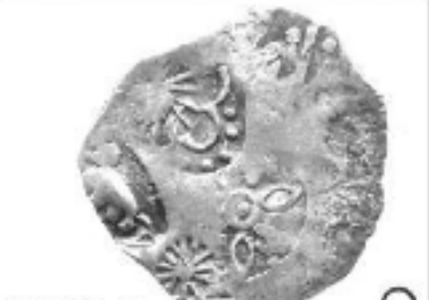
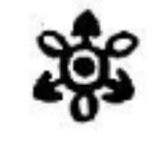
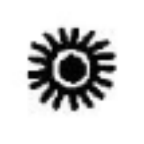
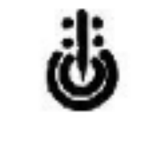
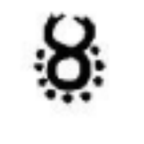
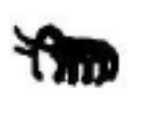
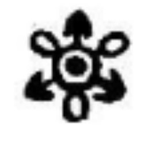
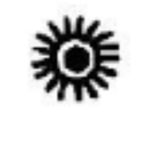
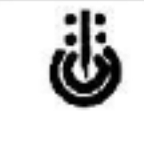
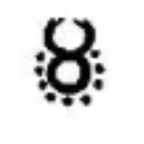
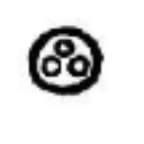
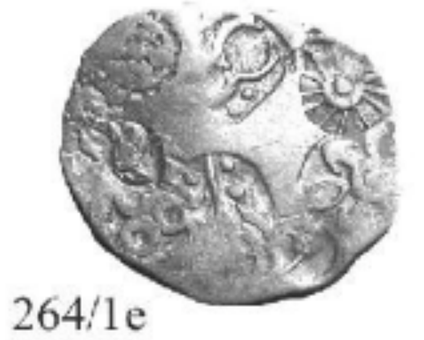
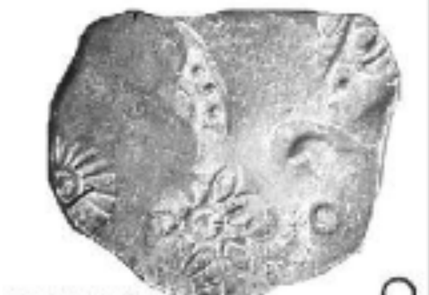
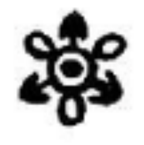
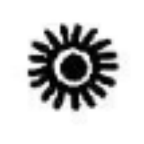
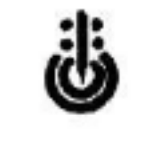
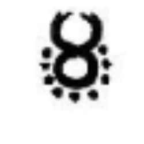
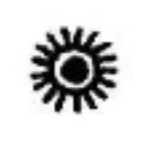
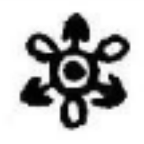
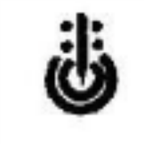
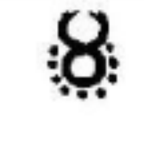
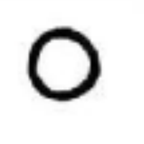
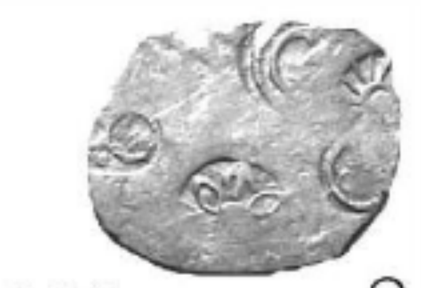
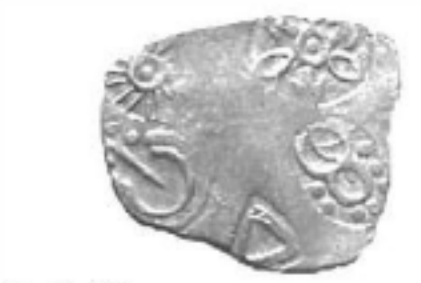
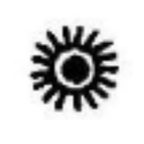
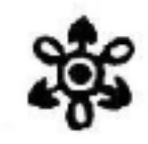
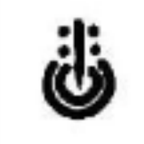
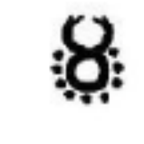
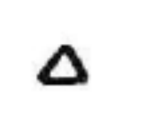
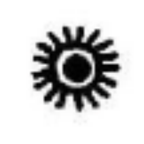
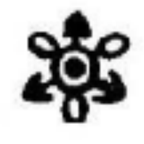
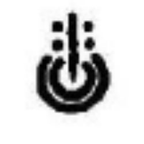
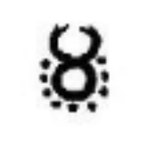
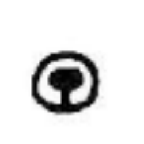
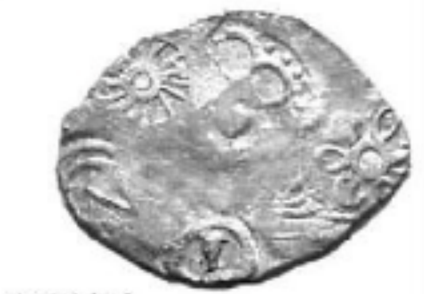
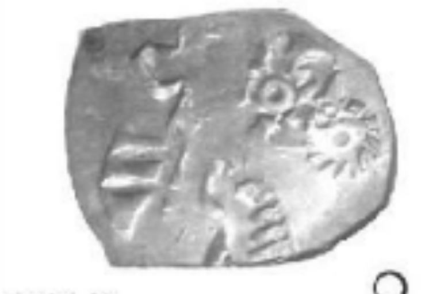
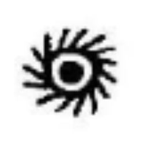
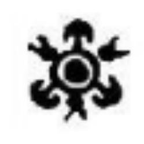
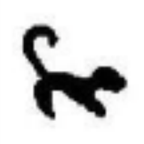
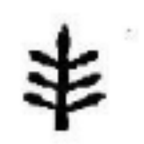
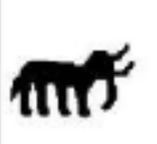
| 262b | I XXXVI A 37<br>SS |  |  |  |  |  | <br>262b | no image available<br>263 |
| 263 | I XXXVI A 39<br>Aur |  |  |  |  |  | | |
| 264 | I XXXVI A 42<br>Aur |  |  |  |  |  | no image available<br>264 | <br>264a |
| 264a | I XXXVI A 58<br>SS |  |  |  |  |  | | |
| 264/1a | I XXXVII A 4<br>RT |  |  |  |  |  | <br>264/1a | <br>264/1b |
| 264/1b | I XXXVII A 28<br>RT |  |  |  |  |  | | |
| 264/1c | I XXXVII A 32<br>SS |  |  |  |  |  | <br>264/1c | <br>264/1d |
| 264/1d | I XXXVII A 36<br>A |  |  |  |  |  | | |
| 264/1e | I XXXVII A 37<br>PT |  |  |  |  |  | <br>264/1e | <br>264/1f |
| 264/1f | I XXXVII A 43<br>PT |  |  |  |  | | | |
| 264/1g | I XXXVII A 44<br>A |  |  |  |  |  | <br>264/1g | <br>264/1h |
| 264/1h | I XXXVII A61<br>A |  |  |  |  |  | | |
| 264/1j | I XXXVII A175<br>A |  |  |  |  |  | <br>264/1j | <br>264/2a |
| 264/2a | I XXXVIII A1<br>RT |  |  |  |  |  | | |

## SERIES I Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | PHOTOGRAPHS | |
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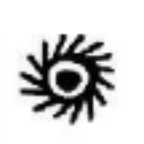
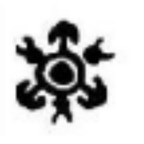
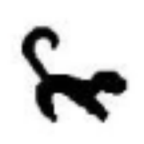
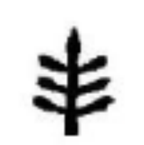
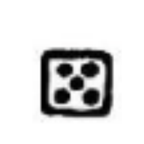
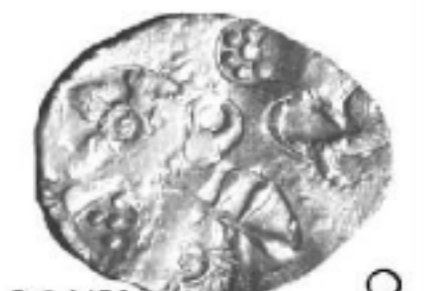
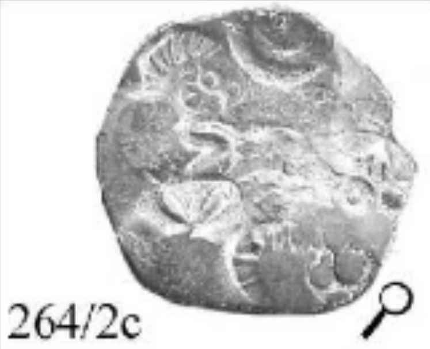
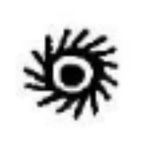
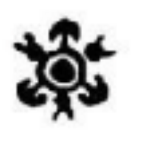
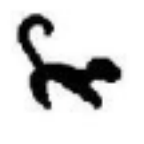
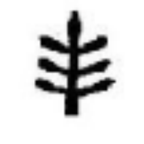
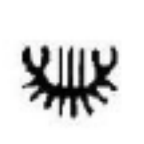
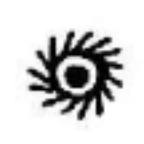
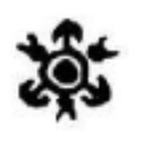
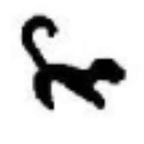
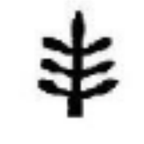
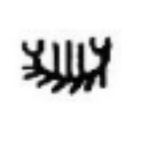
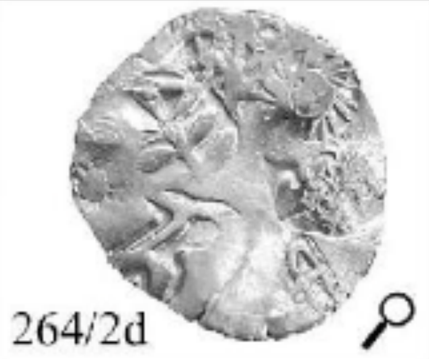
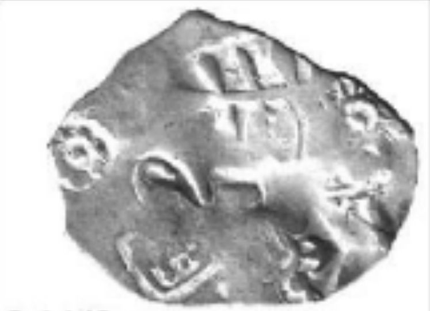
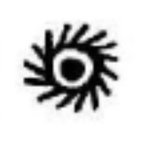
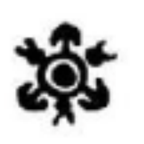
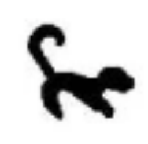
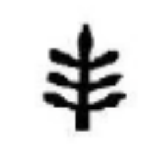
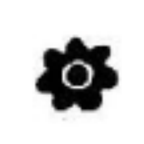
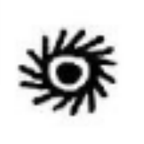
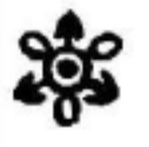
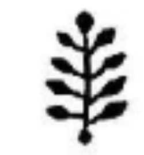
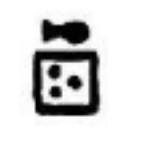
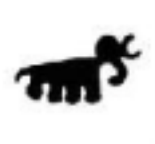
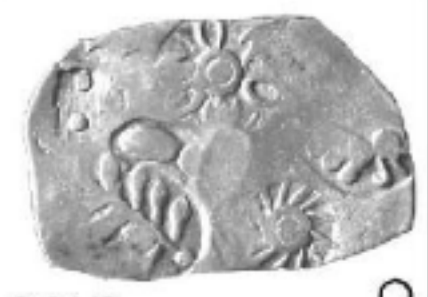
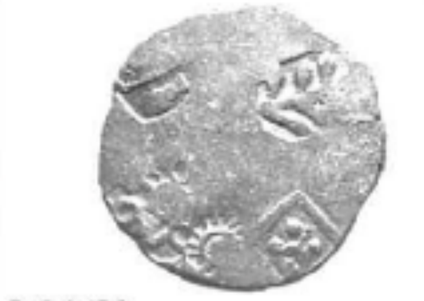
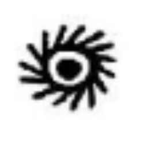
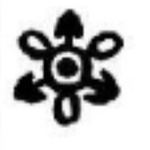
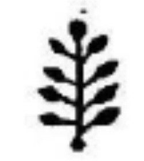
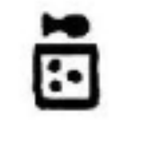
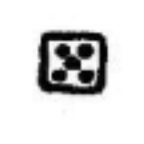
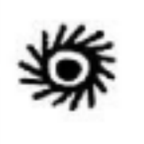
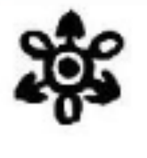
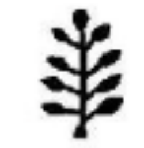
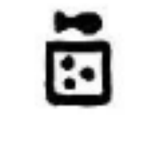
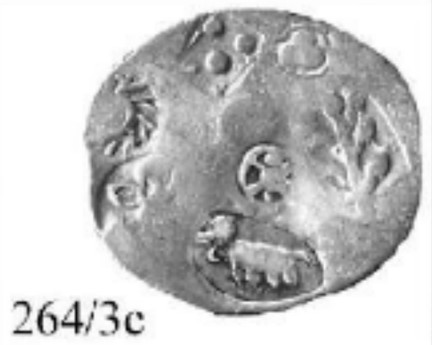
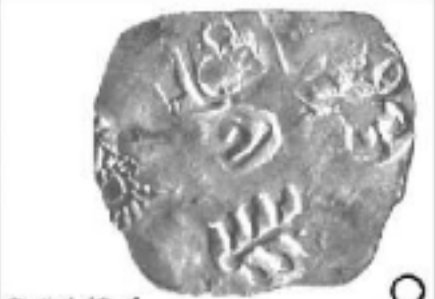
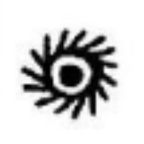
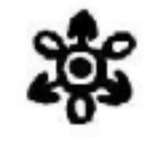
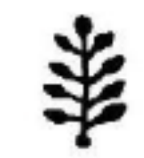
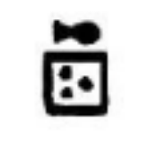
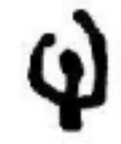
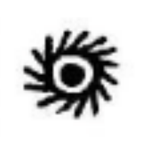
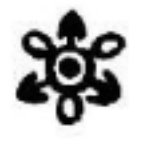
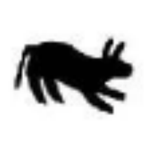
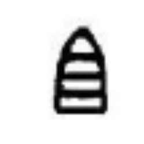
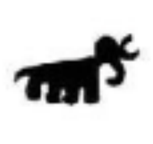
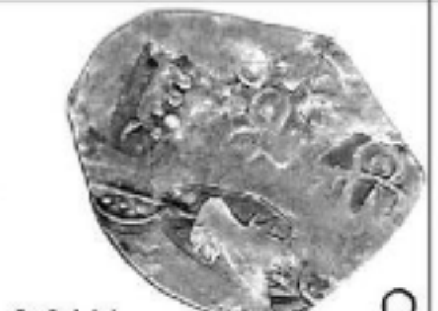
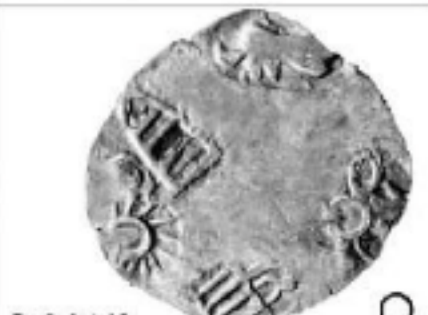
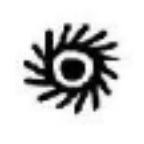
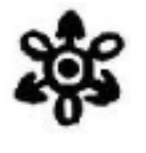
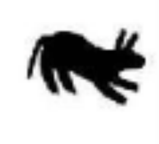
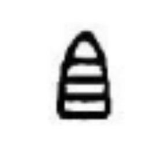
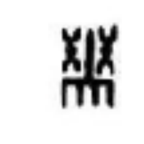
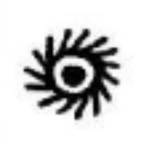
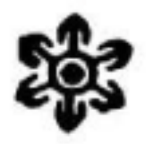
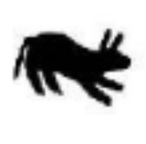
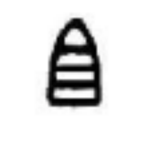
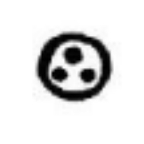
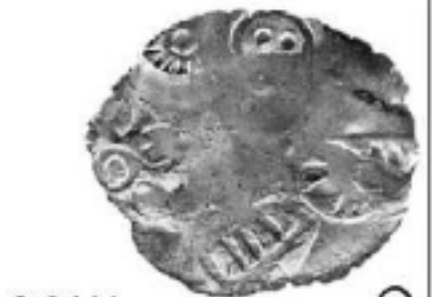
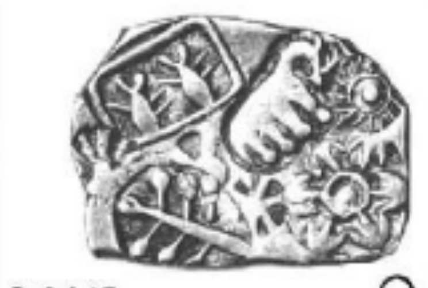
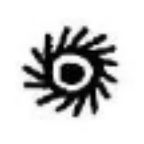
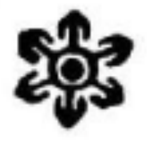
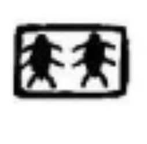
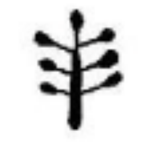
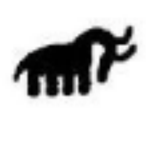
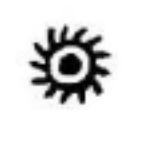
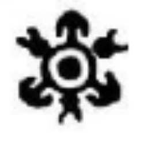
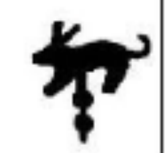
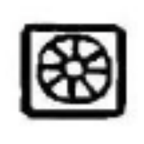
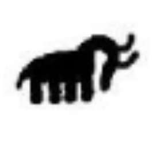
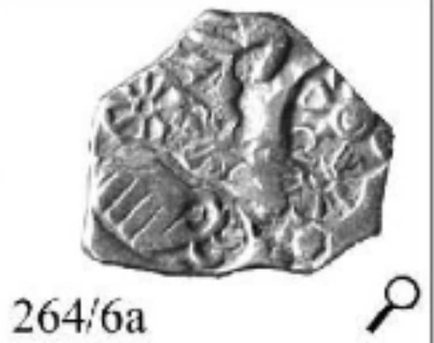
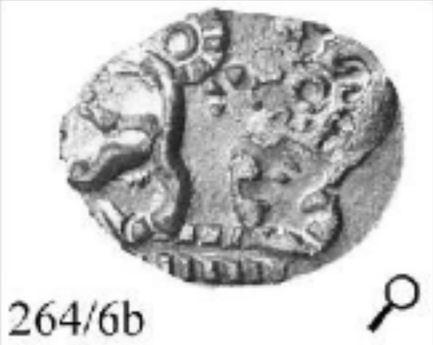
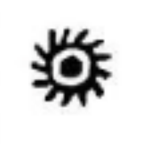
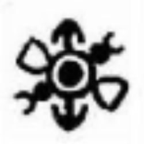
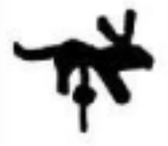
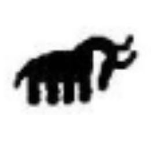
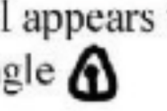
| 264/2b | I XXXVIII A 4<br>PT |  |  |  |  |  | <br>264/2b | <br>264/2c |
| 264/2c | I XXXVIII A 30<br>PT |  |  |  |  |  | | |
| 264/2d | I XXXVIII A 32<br>PT |  |  |  |  |  | <br>264/2d | <br>264/2e |
| 264/2e | I XXXVIII A35<br>PT |  |  |  |  |  | | |
| 264/3a | I XXXIX A1<br>RT |  |  |  |  |  | <br>264/3a | <br>264/3b |
| 264/3b | I XXXIX A4<br>A |  |  |  |  |  | | |
| 264/3c | I XXXIX A36<br>T |  |  |  |  | | <br>264/3c | <br>264/3d |
| 264/3d | I XXXIX A 497<br>BM |  |  |  |  |  [1] | | |
| 264/4a | I XL A1<br>A |  |  |  |  |  | <br>264/4a | <br>264/4b |
| 264/4b | I XL A28<br>DM |  |  |  |  |  | | |
| 264/4c | I XL A47<br>A |  |  |  |  |  | <br>264/4c | <br>264/5a |
| 264/5a | I XLI A 1<br>PM |  |  |  |  |  | | |
| 264/6a | I XLII A 1<br>PT |  |  |  |  |  | <br>264/6a | <br>264/6b |
| 264/6b | XLII B 1<br>A |  |  |  | |  | | |

[1] This symbol appears to be the top part of a human figure but the lower area is softly struck. Alternatively it could be a dot on a short pole in a triangle 

## Vassal state contemporary with Series I

A small group of coins passed through trade in the 1970s comprising half-*karshapanas* with four marks including the sun and six-armed symbols. Some of these were published (Valdettaro 1978) and were said to comprise 50 or 60 coins coming from Manipur in 1971, but the exact findspot was not revealed. Mitchiner (2004) has reported that it came from a village east of Dhaka. The author acquired one of these in trade in 1972 and similar coins were seen in a US sales catalogue in 1973. Since then few have appeared in the market. More recently coins have been seen of similar general appearance but differing in style and symbology, weighing between 1.6 and 2.1 grams and said to be from Bangladesh. Additionally the archaeological site of Wari-Bateshwar on the northeast part of the Ganga delta has yielded similar coins along with normal Mauryan coins (Bose 2010, 2011). All these groups appear to be from the same state or closely linked states: the use of the same mark in Valdettaro's original find and some of the more recent items (an elaborate pecking bird, mark 626) - suggests they all belong to the same state.

Were it not for the presence of the sun and six-armed symbols, these coins would fall into the early *janapada* series and thus lie outside the scope of this Catalogue. They are included here because these marks surely represent the exclusive stamp of the Magadhan state, and thus the issuing authority here was in some way linked to Magadha. In the ever-increasing range of early *janapada* coins being discovered no other instance of the use of these two symbols together has been recorded (they do of course occur in the post-Mauryan coins of Series VIII).

There are several clues to help resolve their date. The obvious question is whether they belong to the early period or whether they were issued in the wake of the decline of the Mauryan Empire. The factors that place them clearly in the earlier period are:

1. They are all of fine silver; in the immediate post-Mauryan age base silver at best was produced.
2. The style of the six-armed symbols imitate (not always very accurately) a range seen in Series I or II.
3. The coins bear only four marks, a system that went out of use early in Series I.
4. The style of the other marks follows the 'florid' designs reminiscent of other early *janapada* issues.
5. Examples are known restruck (e.g. 264/7a on 264/7b from the Author's collection from 1972); see also Bose 2011 who describes restruck coins from Wari-Bateshwar. The restriking phases in Magadha coinage occur in two phases in Series I and again in Series III and IVa. The practice has not been observed in the Mauryan or the immediate post-Mauryan periods.

Some of the symbol designs have special interest in their distinctly maritime theme. The representation of a ship, a shark-like fish, a fish apparently with a hook through its mouth, and a prawn or lobster, are truly remarkable. The style is totally different from that of Series I – highly artistic, yet with erratic quality. The attention to detail in the animate forms surpasses anything else in the whole punchmarked range, yet the engraver has paid little attention to copying the Magadhan sun and six-armed symbols, failing to get the correct symmetry and even using broken punches. The sun sometimes lacks the central dot and sometimes the curved rays go anti-clockwise. The contrast between the handling of the sun and six-armed symbols and the other marks may itself tell a story. An engraver who had the vision and skill to represent a prawn or a fish on a hook would hardly find the task of copying a sun or six-armed symbol challenging. Were they deliberately mis-represented for some political reason? The plot thickens when we observe that two of the types (264/14a and 15a) actually bear very accurate copies of these marks, as if a corrective was applied at some point.

These coins clearly suggest the issuing state lived off the sea, or perhaps in the Gangetic delta region. The *janapada* of Vanga is traditionally placed in this region but attribution would be tentative. Attribution to Manipur, a region of thick forests and rugged mountainous terrain well outside the Magadhan sphere of control, looks unlikely in this context. In any case the location of the issuing state appears to be towards the eastern margins of Magadhan control, where a looser alliance with Magadha may have been all that could be achieved at this stage.

Some guidance as to the timing of these issues within Series I may also be provided. The pool of Magadhan six-armed symbols which seem loosely to have been adopted is as follows:

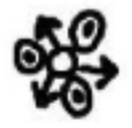
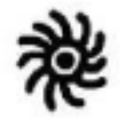
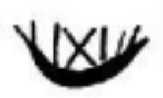
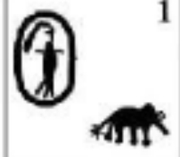
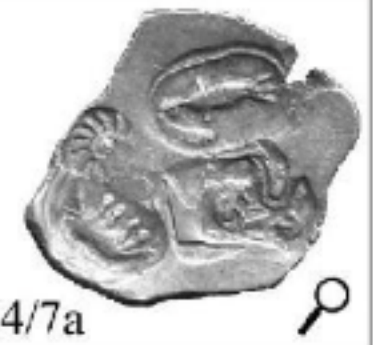
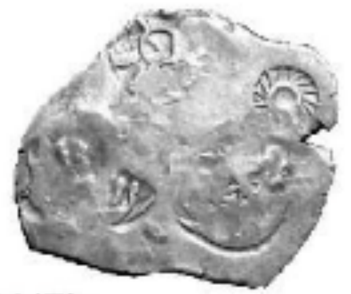
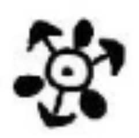
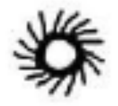
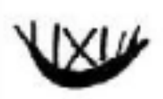
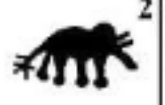
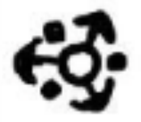
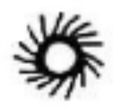
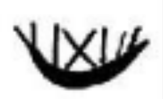
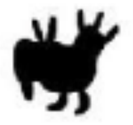
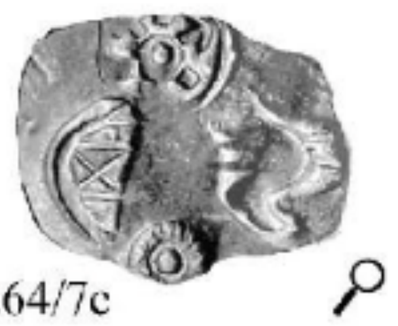
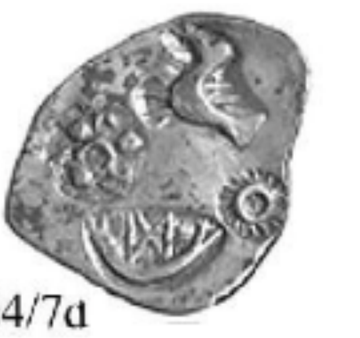
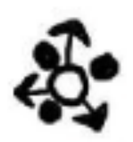
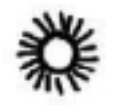
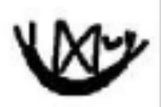
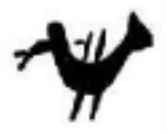
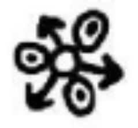
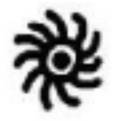
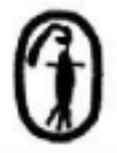
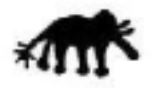
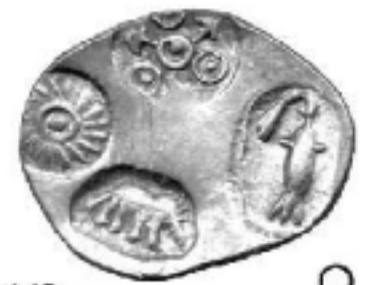
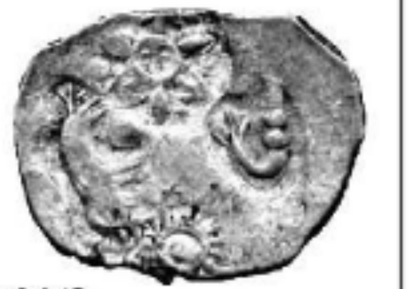
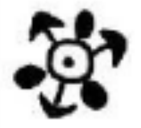
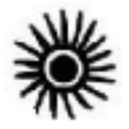
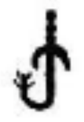
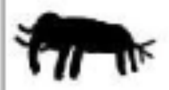
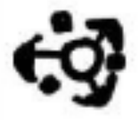
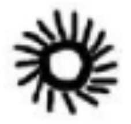
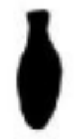
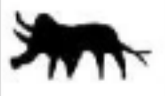
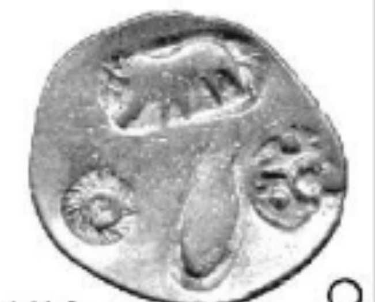
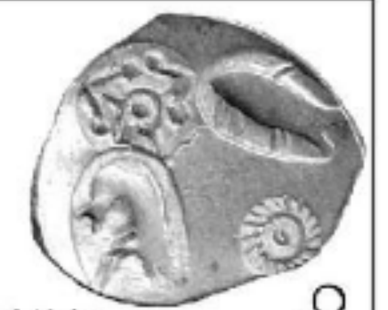
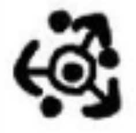
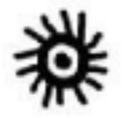
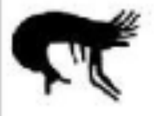
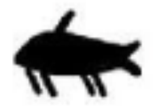
Mark 377, used extensively in Series I.
Mark 385, used in Series I Phase 5.
Mark 419, used in Series II.

A new six-armed symbol, 633, combines four arrows and two solid ovals. The first use of four arrows occurs in Phase 5 of Series I but combined with open ovals.

Despite the inaccuracy in copying of many of the six-armed symbols, their prototypes are fairly clear, suggesting that the coins were produced during Phase 5 in the later part of Series I. These coins thus offer further evidence that at least some *janapada* coinages continued to be issued during much of the time when Magadha was issuing Series I. Combined with the distribution pattern of Series 0 and Series I hoards (Map 5), this suggests Magadha's conquests were modest, and towards the west of its homeland in the Gangetic plains, until the end of Series I.

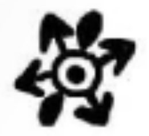
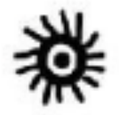
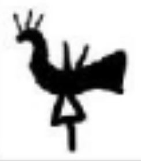
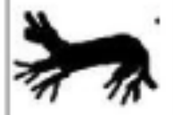
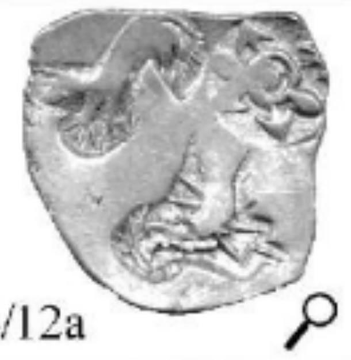
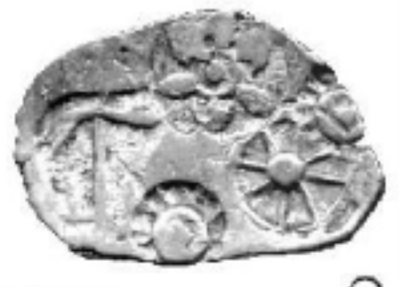
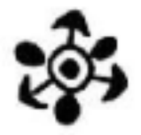
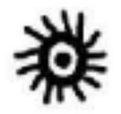
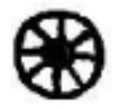
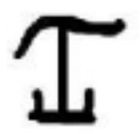
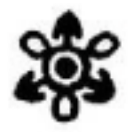
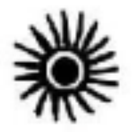
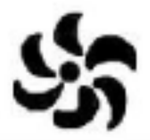
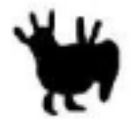
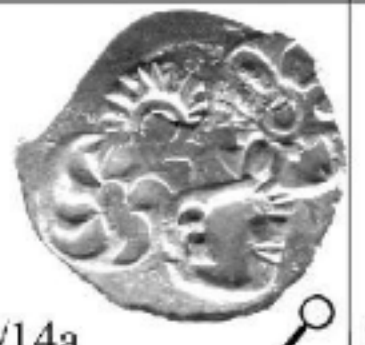
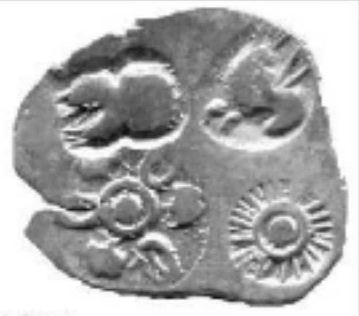
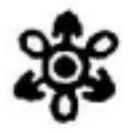
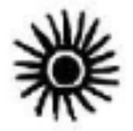
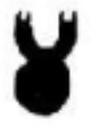
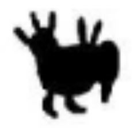
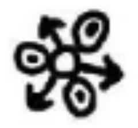
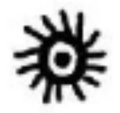
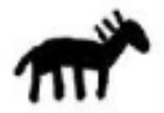
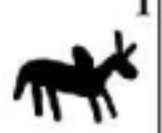
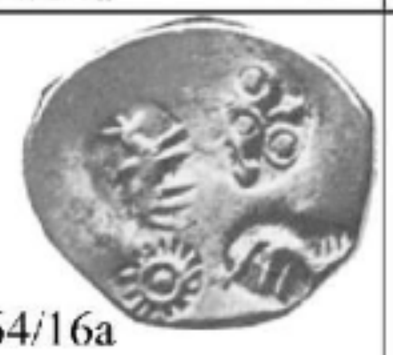
The originality and modernity of the symbols on the Vassal State coins might lead some to question their authenticity. One needs only to read the testimony of Valdettaro (who was himself an excellent judge of authenticity) and to look as well at the coins themselves, and then look at the similar types appearing over forty years later, to allay any doubts.

### SERIES I VASSAL STATE Catalogue

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | Wt. gms | PHOTOS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | | | |
| 264/7a | I XLIII A<br>A |  |  |  |  [1] | 1.72 |  264/7a |  264/7b |
| 264/7b | I XLIV A<br>A |  |  |  |  [2] | 1.84 | | |
| 264/7c | I XLIV B<br>CV 1978, BM |  |  |  |  | 1.92 |  264/7c |  264/7d |
| 264/7d | I XLIV C [3]<br>M 4012-4013 |  |  |  |  | -- | | |
| 264/8a | I XLIV D<br>CV 1978, BM |  |  |  |  | 1.85 |  264/8a |  264/9a |
| 264/9a | I XLV A<br>CV 1978, BM |  |  |  |  | 1.92 | | |
| 264/10a | I XLVI A<br>CV 1978, BM |  |  |  |  | 1.78 |  264/10a |  264/11a |
| 264/11a | I XLVII A<br>CV 1978, BM |  |  |  |  | 1.69 | | |

[1] Double obverse coin with additional mark on new obverse. [2] Old obverse of 264/7a, also known not restruck. [3] Photo courtesy Bangaldesh Unlocked.

## SERIES I VASSAL STATE Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | Wt. gms | PHOTOS | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | | | |
| 264/12a | I XLVIII A<br>CV 1978, BM |  |  |  |  | 1.98 |  264/12a |  264/13a |
| 264/13a | I XLIX A<br>CV 1978, BM |  |  |  |  | 1.89 | | |
| 264/14a | I L A<br>SH |  |  |  |  | 1.5-2.0 |  264/14a |  264/15a |
| 264/15a | I LI A<br>SH |  |  |  |  | 1.8-2.1 | | |
| 264/16a | I LII A<br>CB |  |  |  |  [1] | 1.8 |  264/16a | |
| | | | | | | | | |

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[1] Published by Colin Bruce in India-Asiatic Society Newsletter 11 No.2 1973 A46.

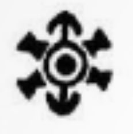
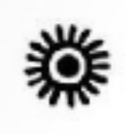
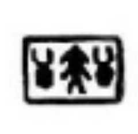
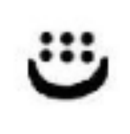
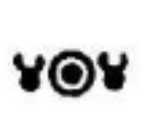
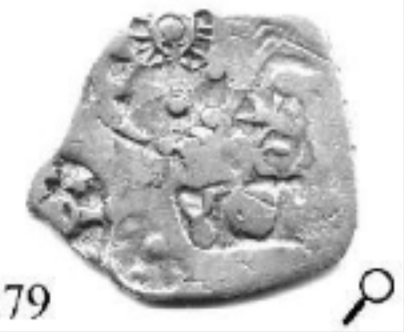
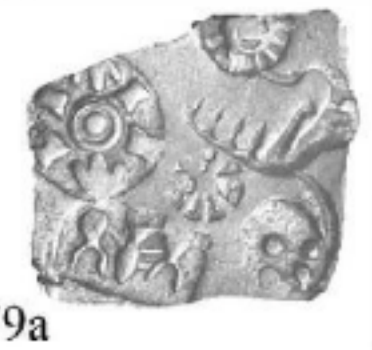
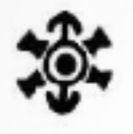
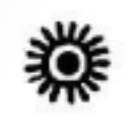
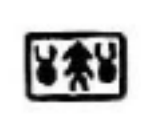
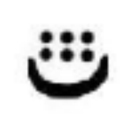
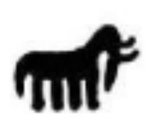
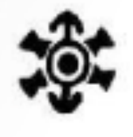
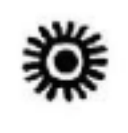
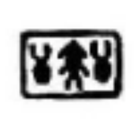
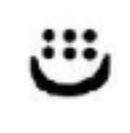
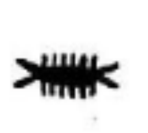
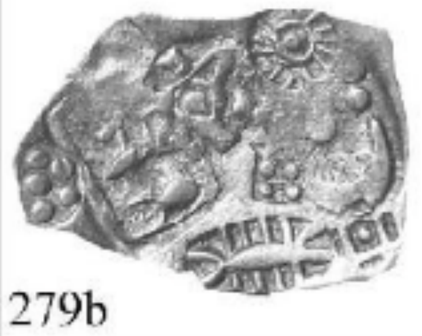
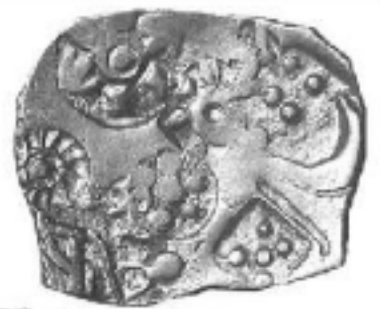
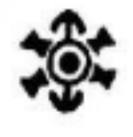
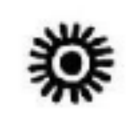
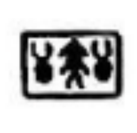
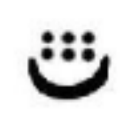
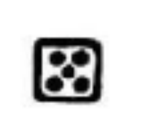
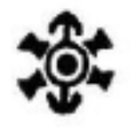
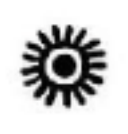
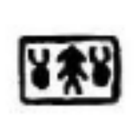
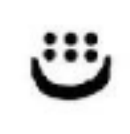
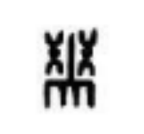
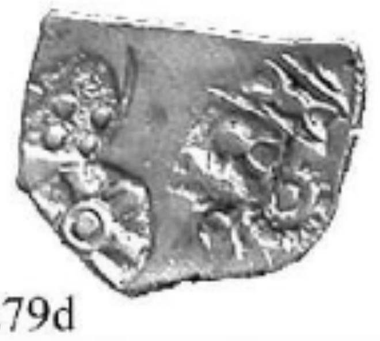
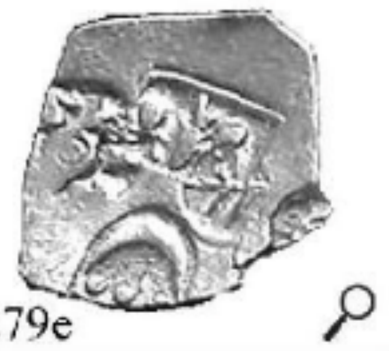
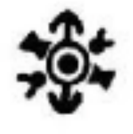
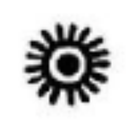
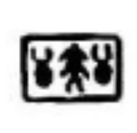
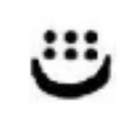
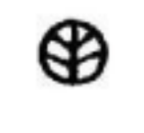
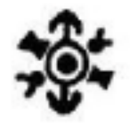
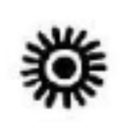
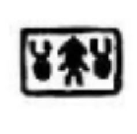
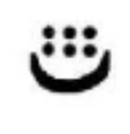
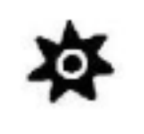
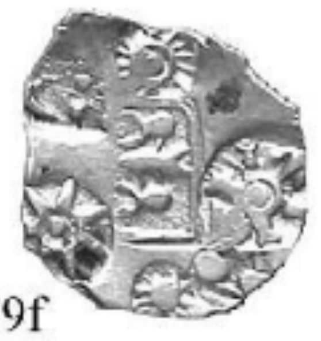
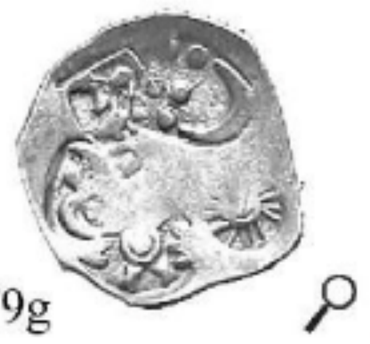
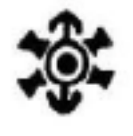
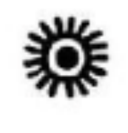
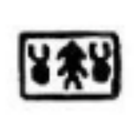
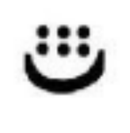
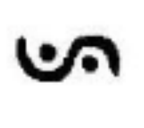
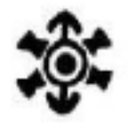
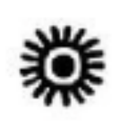
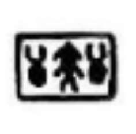
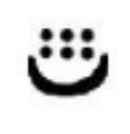
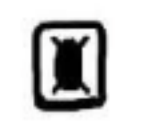
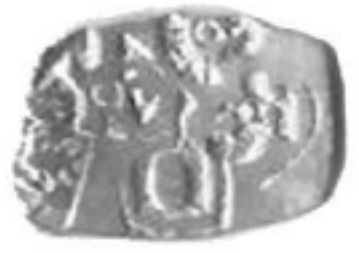
## Series I/II transitional phase

A single variety (279) listed as a part of Series II in the first edition of this work has now expanded to become a group with nine varieties. These coins display hybrid characteristics suggesting their place is transitional between Series I and Series II. Coins in this group often occur alongside coins of Series II and III, but have also been recorded with coins of Series I. That is unusual. Whereas Series II coins use only three fifth marks (elephant, boss & taurines and centipede) the 279 group uses these together with six more fifth marks, implying it does not belong in Series II. But the class is restruck by types in Series III and IVa, linking it to true Series II coins which are likewise restruck. It thus contains characteristics of both Series I and II and probably lies chronologically at the juncture between the two Series. (The new varieties in this class are mostly known from single examples coming from hoards of single obverse Series II coins, so there is as yet only incomplete data on double obverse combinations).

Much of the credit for expanding this class goes to Sharma who for the first time described many of the new varieties and concluded they were a late issue of Series I. The Pratapgarh District hoard (village name Bihar, Sharma 2005) contained 21 coins of Series I, 15 of our 'Series I/II' (fresh, not restruck), and 55 of Kosala *janapada.* It verifies the contemporaneity of these three issues. The Dalmau hoard (Sharma 2007) came from close by, and contained 235 coins of Series I together with 22 of Series I/II. The proximity of the two hoards suggests the mint for Series I/II may have been in this area (Map 5).

In the Catalogue Type 279 from the first edition is transferred to this new Group and all the new varieties retain the type number 279 with letter suffixes.

## SERIES I/II Catalogue

| TYPE | CLASSIF-ICATION & REF. | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 279 | I/II A 2<br>Am, A |  |  |  |  |  | VR |  279 |  279a |
| 279a | I/II A 1<br>T |  |  |  |  |  | S | | |
| 279b | I/II A 3<br>SS 2005, 2007 |  |  |  |  |  | XR |  279b |  279c |
| 279c | I/II A 4<br>SS 2005, 2007 |  |  |  |  |  | VR | | |
| 279d | I/II A 28<br>SS 2005, 2007 |  |  |  |  |  | VR |  279d |  279e |
| 279e | I/II A 29<br>SS 2005, 2007 |  |  |  |  |  | XR | | |
| 279f | I/II A 35<br>SS 2005, 2007 |  |  |  |  |  | XR |  279f |  279g |
| 279g | I/II A 526<br>PT, SS2005, 2007 |  |  |  |  |  | XR | | |
| 279h | I/II A 527<br>BA, PK, SS |  |  |  |  |  | XR |  279h | |
| | | | | | | | | | |

# Series II

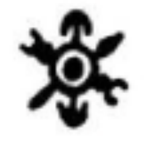
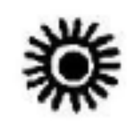
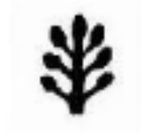
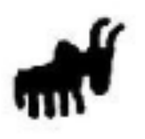
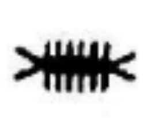
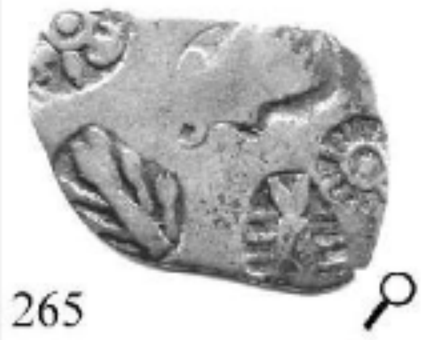
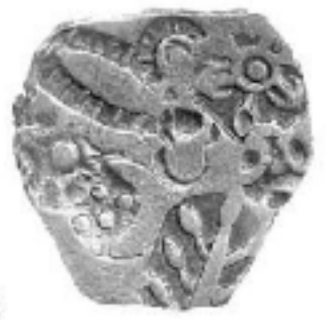
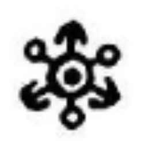
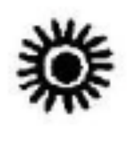
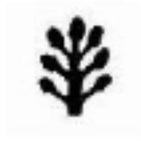
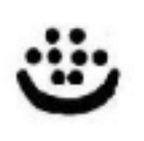
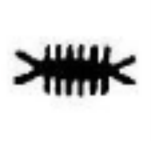
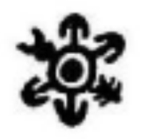
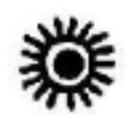
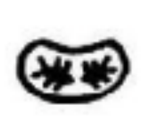
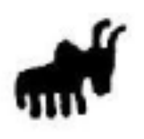
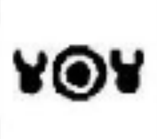
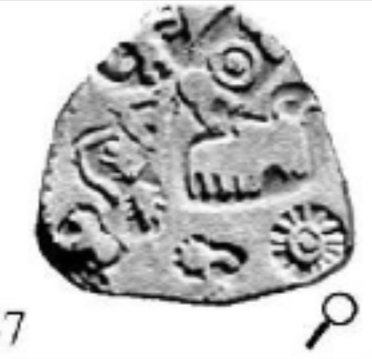
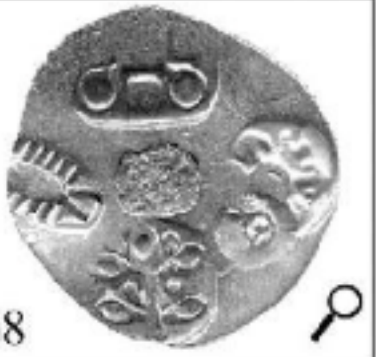
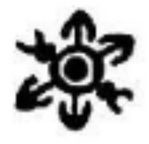
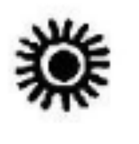
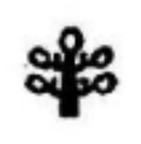
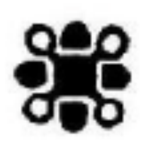
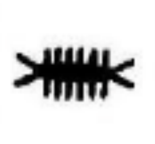
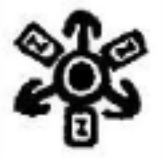
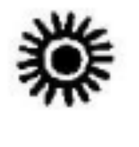
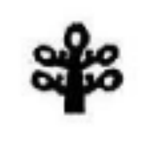
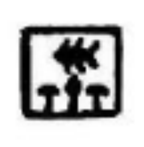
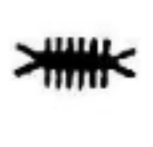
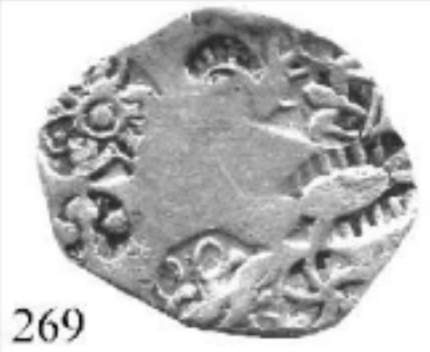
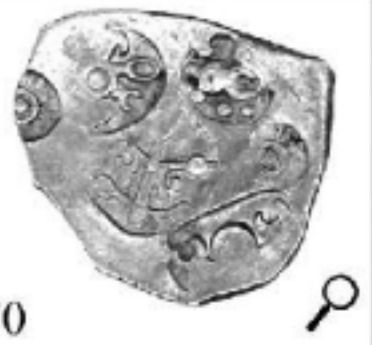
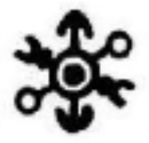
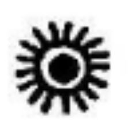
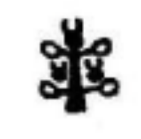
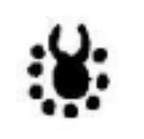
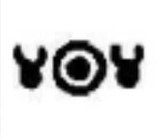
The abrupt change in the circulation of coins taking place at the end of Series I, involving the probable withdrawal and melting of the coinage, offers few clues to the reason. The new coins of Series II onward are the same weight and (by appearance) the same fineness as Series I, only a little smaller and thicker. In all probability, Series II was initiated before the final issues of Series I had ceased.

It is not possible to tie this event to any known dynastic fact, since its date is by no means firmly established. It does however seem to coincide with the beginning of Magadha's wider territorial conquests, because whereas Series I coins are restricted to what is assumed to be the Magadha *janapada* homeland and a small area to its west, coins of Series II onwards are found all over the sub-continent (See Map 3). In our 'short chronology' sequence this transition would be placed shortly before the close of the 5th century BC.

Series II comprises a small group of coins which are nearly always restruck on the original reverse by Series III and IVa. In choice of symbols, style and flan size this series is transitional between I and III. Examples which have escaped restriking are seldom seen, thus the coins are usually identified as 'old obverses' on the reverse of later coins, which together with the bankers marks often make the coins hard to identify. Restruck Series II coins are quite often seen as worn coins in small numbers in hoards containing Series III –VII coins.

A curious phenomenon unique to Series II is the restriction of the fifth mark to just three symbols, the elephant, beetle, and boss between taurines (marks 1, 2 and 3). All three had previously been in use in Series I. If we were able to rescue the meaning of this limitation on choice of fifth marks, we would surely learn a great deal more about punchmarked coinage. The restriction confirms that marks did indeed have a fixed order or function in the sequence of five, and 'fifth' marks signified something specific. That 'something' was expressed by a wide range of marks in Series I and was suddenly curtailed in Series II.

## SERIES II Catalogue

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY[1] | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 265 | II I A 3<br>Am |  |  |  |  |  | R |  265 |  266 |
| 266 | II I B 3<br>Am |  |  |  |  |  | R | | |
| 267 | II II A 2<br>Am |  |  |  |  |  | R |  267 |  268 |
| 268 | II III A 3<br>Am |  |  |  |  |  | R | | |
| 269 | II III B 3<br>Am |  |  |  |  |  | S |  269 |  270 |
| 270 | II IV A 2<br>Am |  |  |  |  |  | N | | |

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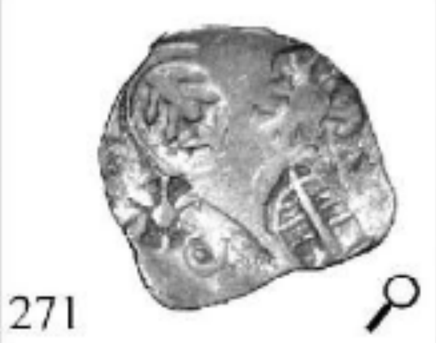
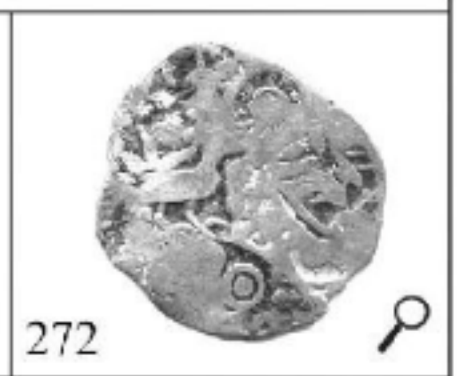
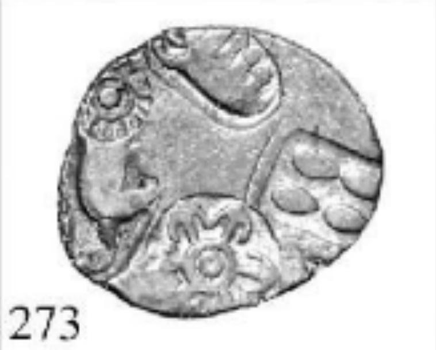
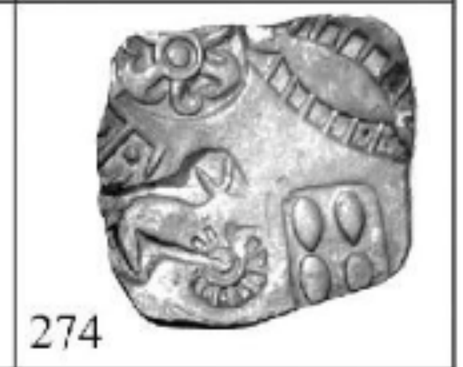
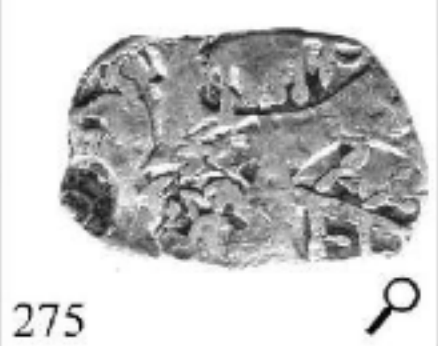
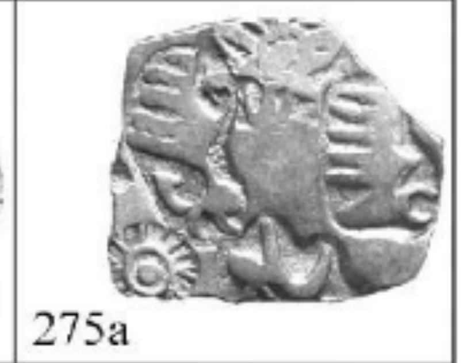
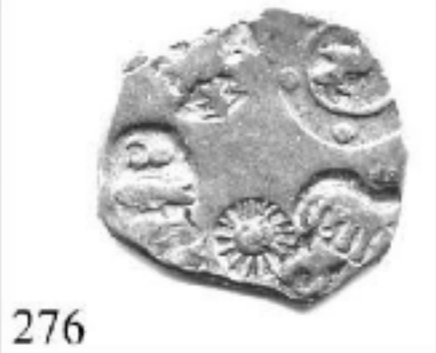
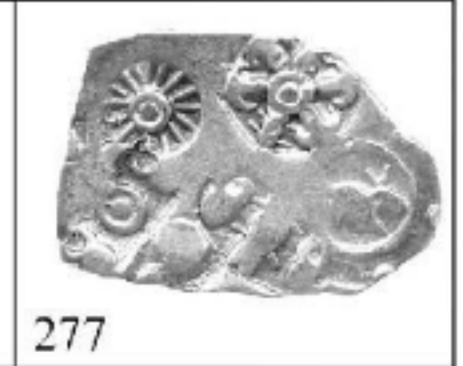
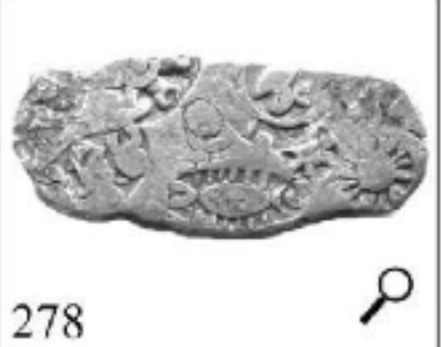
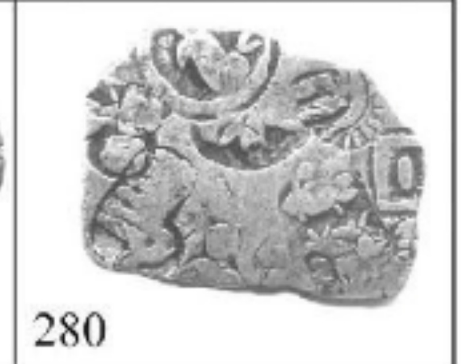
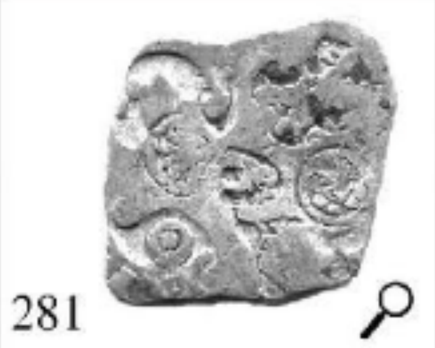
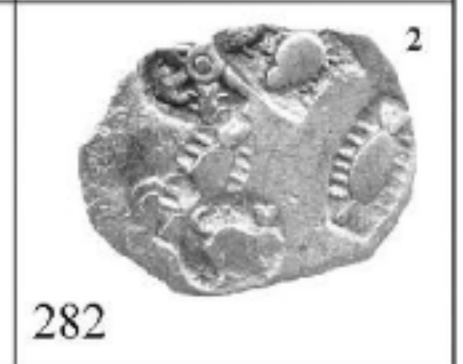
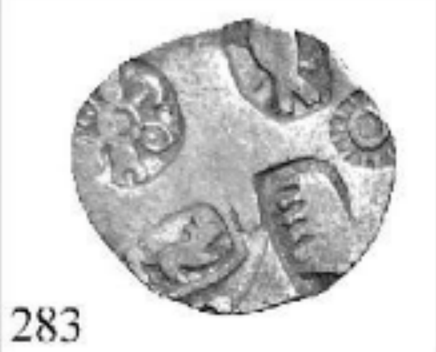
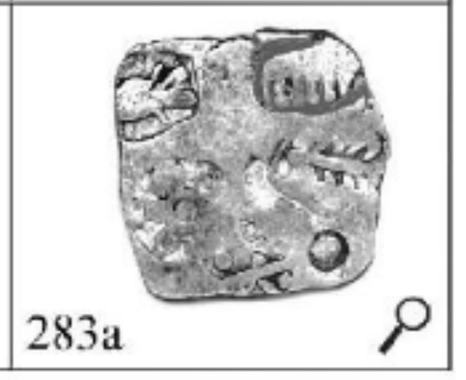
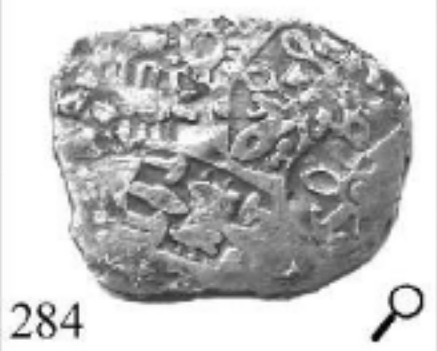
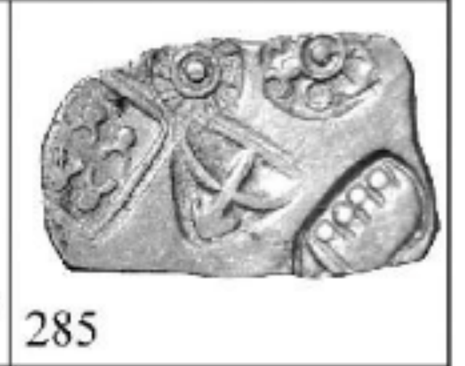
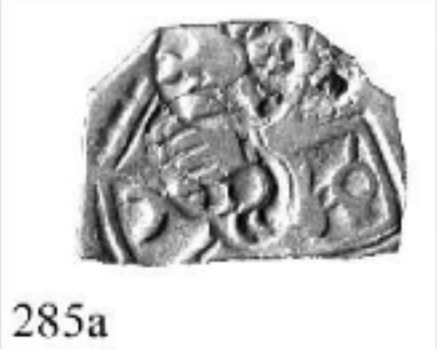
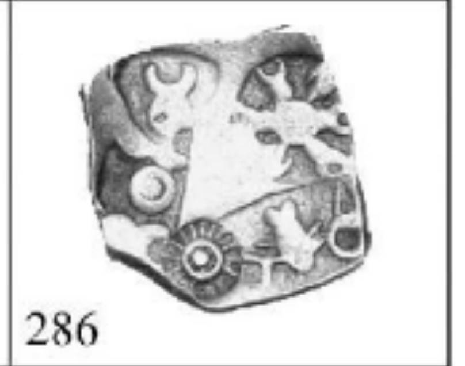
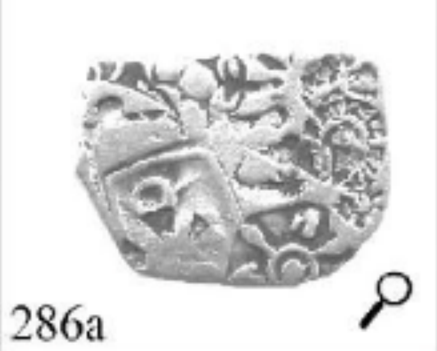
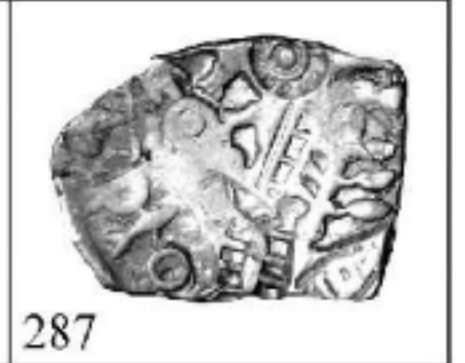
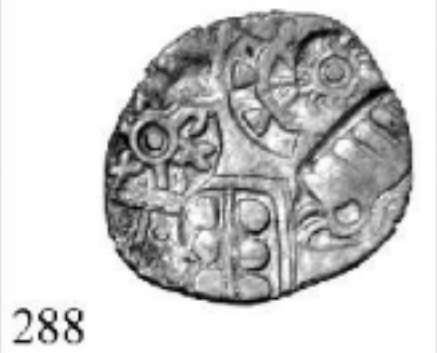
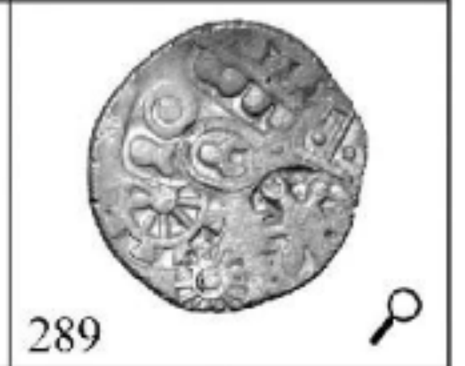
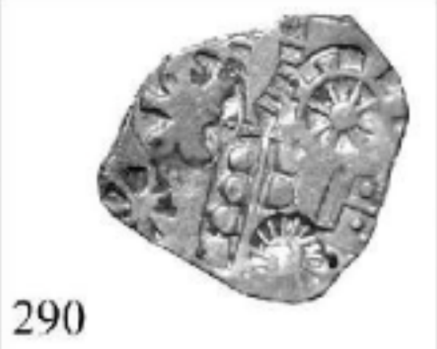
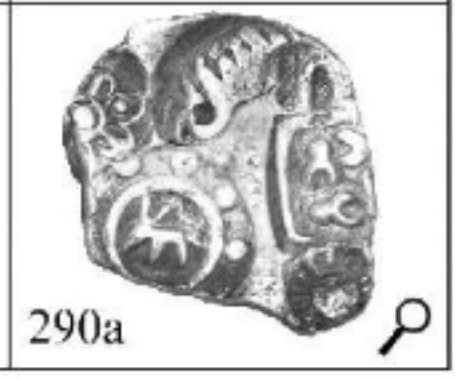
[1] Most coins of Series II occur as old obverses restruck by Series III or IVa. Unstruck coins are R-XR.

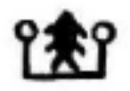
## SERIES II Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 271 | II V A 2<br>Am | | | | | | R |  271 |  272 |
| 272 | II VI A 2<br>Am | | | | | | R | | |
| 273 | II VII A 1<br>Am | | | | | | R |  273 |  274 |
| 274 | II VII A 3<br>Am | | | | | | R | | |
| 275 | II VII B 1<br>Am | | | | | | R |  275 |  275a |
| 275a | II VII C 1<br>BB | | | | | | XR | | |
| 276 | II VIII A 1<br>Am | | | | | | N |  276 |  277 |
| 277 | II VIII A 2<br>Am | | | | | | S | | |
| 278 | [1] II VIII A 3<br>Am | | | | | | S |  278 |  280 |
| 280 | II IX A 1<br>Am | | | | | | R | | |
| 281 | II IX A 2<br>Am | | | | | | R |  281 |  282 [2] |
| 282 | II IX A 3<br>Am | | | | | | S | | |
| 283 | II X A 1<br>Am | | | | | | N |  283 |  283a |
| 283a | II X B 1<br>RT | | | | [3] | | XR | | |

[1] Type 279 and associated new types are transferred to Series I/II. [2] This example has fifth mark twice and no sun. Two such examples have been noted. [3] The fourth symbol needs verification

## SERIES II Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 284 | II XI A 3<br>Am | | | | | | R |  284 |  285 |
| 285 | II XII A 1<br>Am | | | | | | N | | |
| 285a | II XIII A 1<br>BB | | | | | | XR |  285a |  286 |
| 286 | II XIII A 2<br>Am | | | | | | S | | |
| 286a | II XIII B 1<br>A, PT | | | | | | XR |  286a |  287 |
| 287 | II XIII B 3 [1]<br>A | | | | | | VR | | |
| 288 | II XV A 1<br>Am | | | | | | R |  288 |  289 |
| 289 | II XV A 2<br>Am | | | | | | R | | |
| 290 | II XV A 3<br>A | | | | | | VR |  290 |  290a |
| 290a | II XVI A 1<br>SS | | | | | | XR | | |

[1] The third mark for Type 387 formerly drawn as  is revised to match Class II XIII. Thus II XIV is deleted. There may be some variation in this symbol.

## Series III

This Series comprises types restriking Series II, together with other types which do not restrike but are linked by common class and group marks. Probably all types which restrike Series II were also struck as fresh coins on new metal. By this time the recurrent symbols such as the sun, elephant or bull had become standardised in design and a new level of workmanship developed, resulting in some of the most pleasing coins in the whole *karshapana* range. The tight control over symbolism continued into future Series and only began to loosen at the very end of the *karshapana* coinage. Since not all coins in this series are seen as double obverse coins, the easiest method of recognition is probably through the medium flan size (18-26 mm) combined with the very distinctive class and group marks such as the dog and taurines, palm tree, and rhinoceros.

In Series III and IV there is a pronounced contrast between large classes with many varieties struck in great numbers, and short ones with limited types that are often rare. This phenomenon is also present, but less frequent, in Series I. It is tempting to think of the large common classes as the product of the main mint or mints while the others would represent regional mints, but the paucity of localised hoard evidence robs the theory of proof (see Map 4).

The matrix of combinations of restrikes in Series III/IVa over Series II (Table 23) shows combinations recorded to late 2013: it is a field where the vigilance of collectors continues to contribute to its completion. Most types in Series II are recorded as being restruck by something; this further bonds the Series which is already distinct in using only three fifth marks. In Series III/IVa, although many individual types within different classes so far have not been noted as overstruck, only two classes (III XII and IV II) have not turned up examples of double obverse coins, but both these are extremely rare single-type classes, so their existence as double obverse coins may yet be discovered. Hence this restriking phase, unlike the earlier ones in Series I, is nearly 'watertight' in that it does not reveal anything about the chronology within Series II or III/IVa. The large variation in the number of combinations of Old and New obverse seen in Table 23 mostly reflects the variation in rarity of the different types.

What is apparent is that when the restriking phase took place, the coinage in circulation probably consisted almost entirely of Series II coins with a few strays from Series I. That corroborates the case for Series II being intermediate between Series I and III. It also suggests that there was a relatively small pool of coin types in the marketplace at this time, before the recoinage of Series III got underway, but after Series I coins had been largely removed from circulation. Series II (including Series I/II which are also overstruck) comprises only 39 types. The alternative hypothesis, that Series II coins were selected from a larger circulating pool including Series I and *janapada* coins, does not fit with the hoard evidence that Series I coins had been withdrawn before overstriking began.

The purpose of this restriking phase cannot have had anything to do with weight or fineness: Series III/IVa coins are indistinguishable from Series II in this respect. It is possible that in this case a dynastic event was behind the action. Such events often happen without warning. The great Series II recoinage had not progressed very far when events overtook it; perhaps a violent change in the Magadhan ruling hierarchy necessitated that all the Series II coins be overstruck.

Table 23: Recorded combinations of Old and New obverses in Series IVa-III/II restriking phase.

| New Obv | Old Obv | 265 | 266 | 267 | 268 | 269 | 270 | 271 | 272 | 273 | 274 | 275 | 276 | 277 | 278 | 279* | 279b | 279g | 280 | 281 | 282 | 283 | 284 | 285 | 286 | 287 | 288 | 289 | 290 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 354 |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 353 |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 352 |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 351 |   |   | ▨ |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 349 |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 346 |   |   |   | ▨ |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |
| 345 |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 344 |   |   |   | ▨ |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |
| 343 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |
| 342 |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   | ▨ |   |   |
| 341 |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |
| 340 |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   | ▨ | ▨ | ▨ | ▨ |   |   | ▨ |   |   | ▨ |   |
| 339 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 338 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |
| 336 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |
| 335 |   |   |   | ▨ |   |   | ▨ |   |   | ▨ |   | ▨ |   |   |   | ▨ |   |   |   |   |   |   |   | ▨ |   |   | ▨ |   |   |
| 334 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |
| 333a |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 333 |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   | ▨ | ▨ |   |   |   |   |   |   |   |
| 324 |   |   |   |   |   |   | ▨ |   |   |   |   |   | ▨ |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |
| 319 |   |   |   |   |   |   | ▨ |   |   |   |   | ▨ |   | ▨ |   | ▨ |   |   | ▨ |   |   | ▨ |   | ▨ | ▨ |   | ▨ |   |   |
| 317 |   |   |   |   |   |   | ▨ |   | ▨ |   |   |   |   |   |   |   |   |   |   | ▨ |   | ▨ |   |   |   |   |   | ▨ |   |
| 316 |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 315 |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 314 |   |   | ▨ |   |   |   |   |   |   |   | ▨ |   |   |   |   |   | ▨ |   |   |   |   | ▨ |   |   |   |   |   |   |   |
| 313 |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   | ▨ |   |   |   |   |   | ▨ |   |   |   |   |   |
| 312a |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |
| 312 |   |   | ▨ |   |   |   |   |   |   |   |   |   | ▨ |   | ▨ |   |   |   | ▨ |   |   |   | ▨ |   |   |   |   |   |   |
| 311 |   |   |   |   |   |   |   | ▨ | ▨ |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   | ▨ |   |   |   |   |   |
| 310 |   | ▨ |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 309 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |
| 308 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   | ▨ |   |   |   |   |   |   |   |
| 307 |   |   |   |   | ▨ |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   | ▨ | ▨ |   | ▨ | ▨ |   |   |   |   |
| 306 |   |   |   | ▨ |   |   | ▨ |   |   |   |   |   | ▨ | ▨ | ▨ |   |   |   |   |   | ▨ |   | ▨ | ▨ |   |   |   | ▨ |   |
| 305 |   | ▨ | ▨ |   | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |   |   | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |
| 304a |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |
| 304 |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 303 |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 302 |   |   |   |   | ▨ |   | ▨ | ▨ | ▨ | ▨ | ▨ |   | ▨ |   |   |   |   |   |   | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |   |   | ▨ |   |
| 301 |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |
| 300a |   |   |   | ▨ |   | ▨ |   |   | ▨ |   |   |   |   |   | ▨ | ▨ |   |   |   |   |   | ▨ | ▨ | ▨ | ▨ | ▨ |   | ▨ |   |
| 298 |   | ▨ |   |   |   |   | ▨ | ▨ |   | ▨ |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |
| 297 |   | ▨ |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 296 |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   | ▨ |   |   |   |   |
| 295/01 |   |   | ▨ | ▨ | ▨ | ▨ | ▨ |   |   |   | ▨ |   | ▨ | ▨ | ▨ |   |   |   | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ | ▨ |   |   | ▨ |   |
| 293 |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 292 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ▨ |   |
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## SERIES III Catalogue

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
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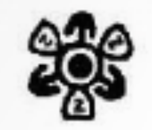
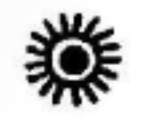
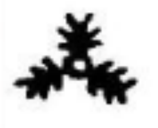
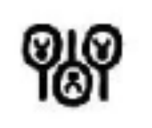
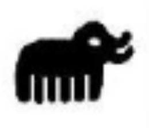
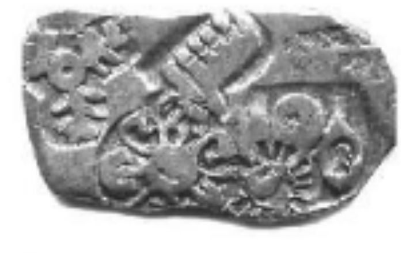
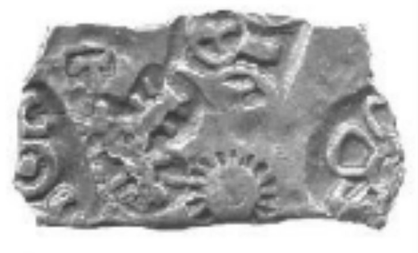
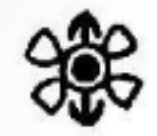
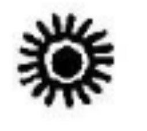
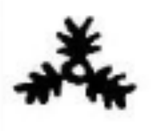
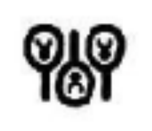
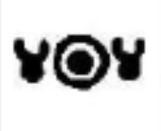
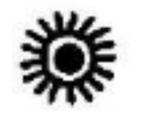
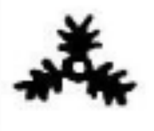
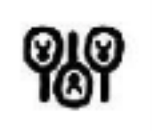
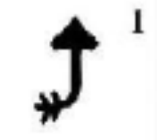
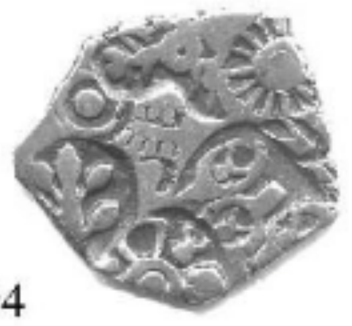
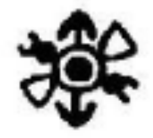
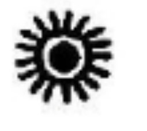
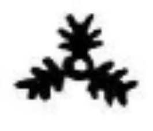
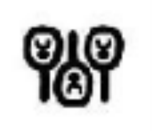
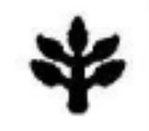
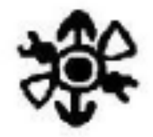
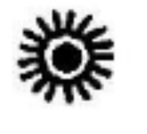
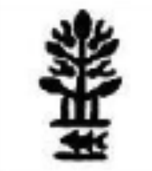
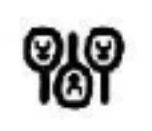
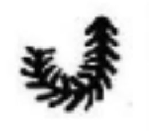
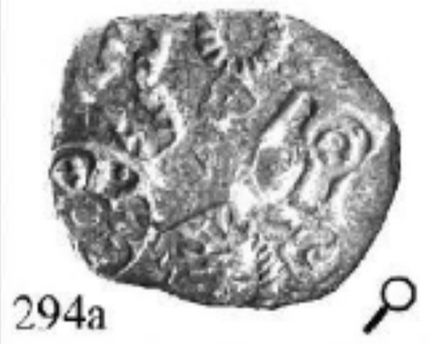
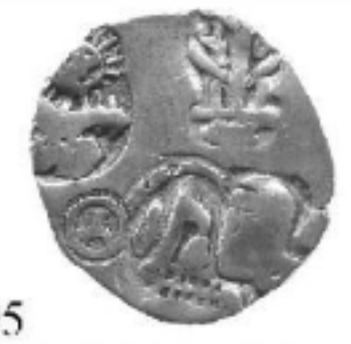
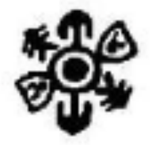
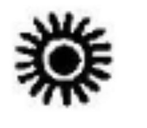
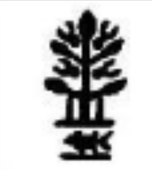
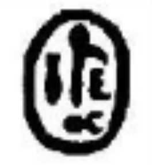
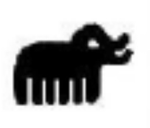
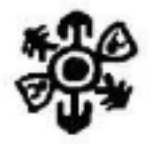
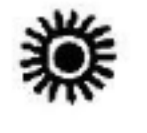
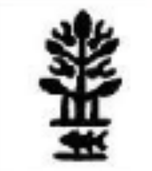
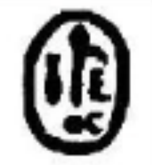
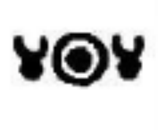
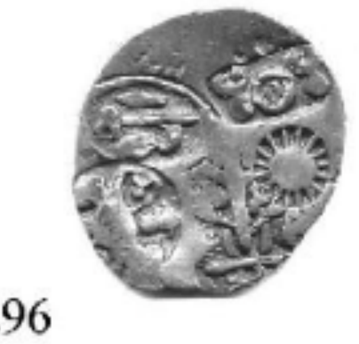
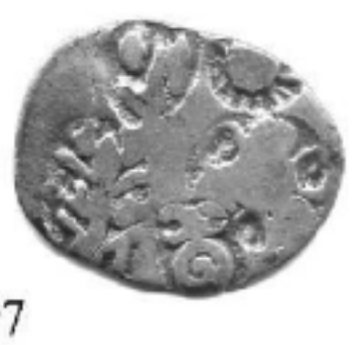
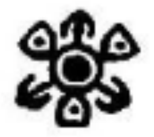
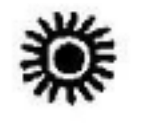
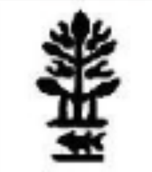
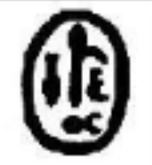
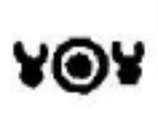
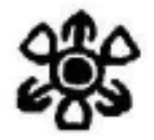
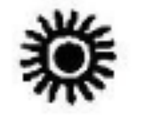
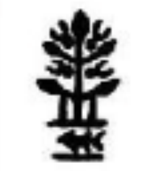
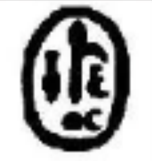
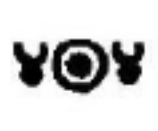
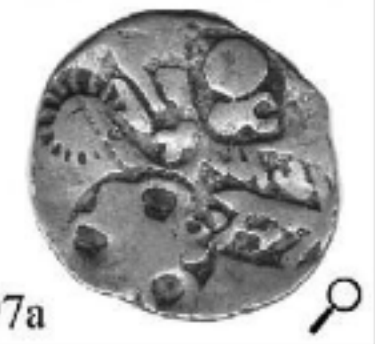
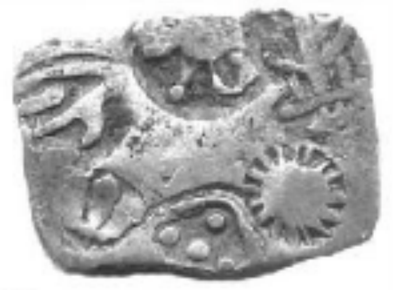
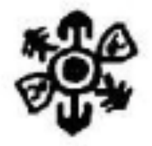
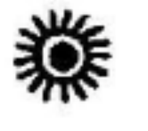
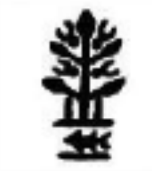
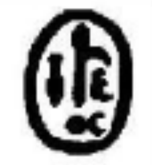
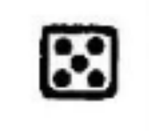
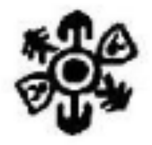
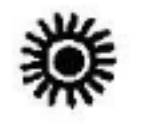
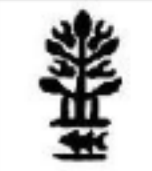
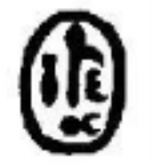
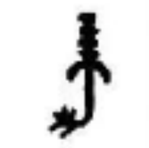
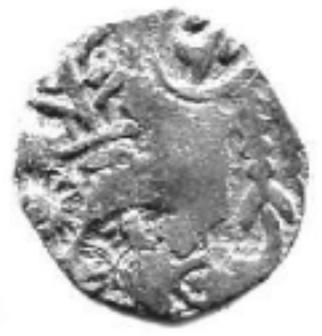
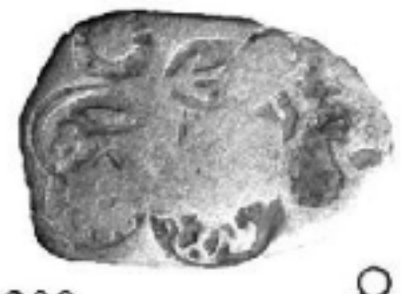
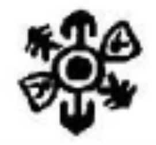
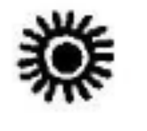
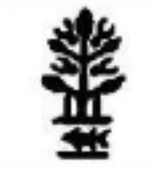
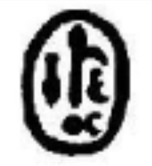
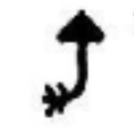
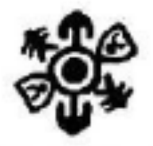
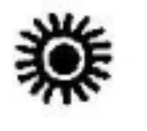
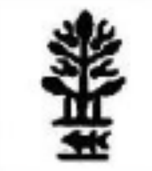
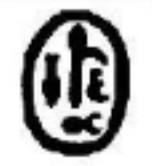
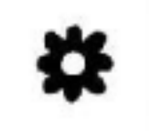
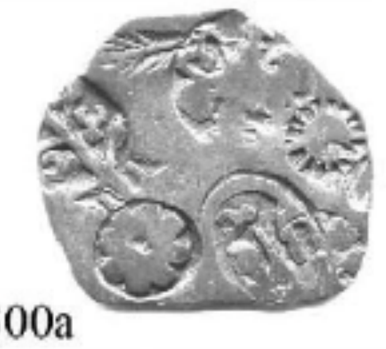
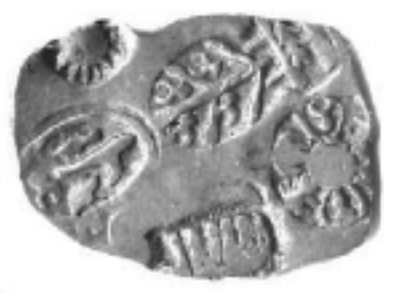
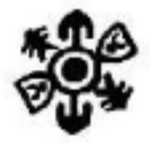
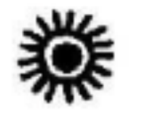
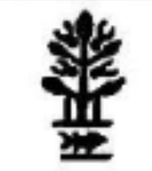
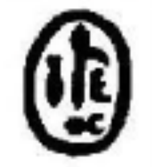
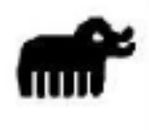
| 291 | III I A 1<br>Am |  |  |  |  |  | N |  291 |  292 |
| 292 | III I A 2<br>A |  |  |  |  |  | R | | |
| 293 | III I A 7<br>Mac | ? |  |  |  |  [1] | R | no image available<br>293 |  294 |
| 294 | III I A 9<br>Am |  |  |  |  |  | R | | |
| 294a | III I A 81<br>BB |  |  |  |  |  | XR |  294a |  295 |
| 295 | III II A 1<br>Am |  |  |  |  |  | C | | |
| 296 | III II A 2<br>Am |  |  |  |  |  | C |  296 |  297 |
| 297 | III II A 2*<br>Am |  |  |  |  |  | R | | |
| 297a | III II A 2**<br>A |  |  |  |  |  | XR |  297a |  298 |
| 298 | III II A 4<br>A |  |  |  |  |  | R | | |
| 299 | III II A 6<br>A |  |  |  |  |  | R |  299 |  300 |
| 300 | III II A 7<br>Am |  |  |  |  |  [1] | XR | | |
| 300a | III II A 8<br>Am |  |  |  |  |  | XR |  300a |  301 |
| 301 | III II B 1<br>Am |  |  |  |  |  | S | | |

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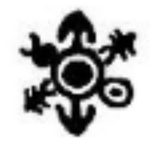
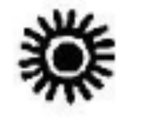
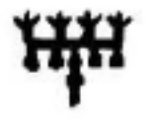
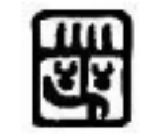
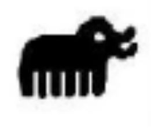
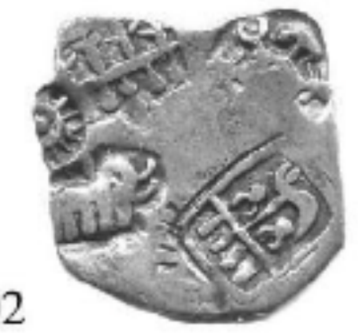
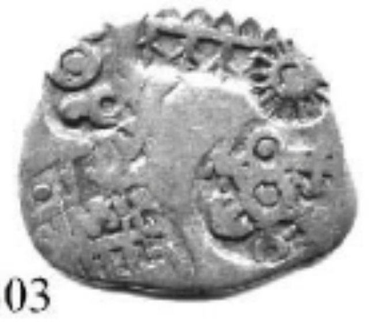
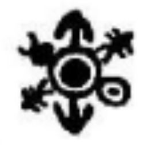
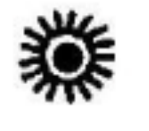
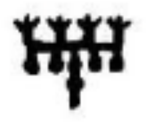
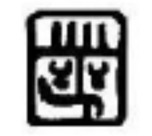
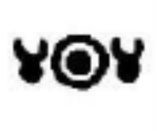
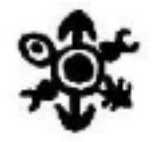
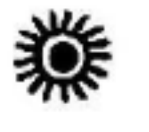
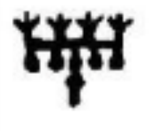
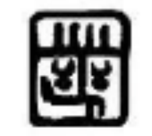
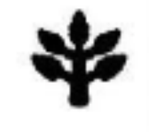
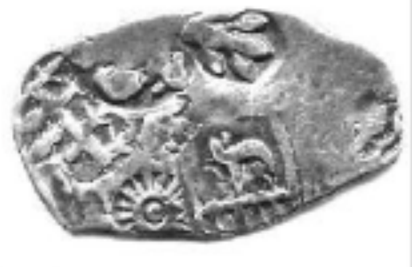
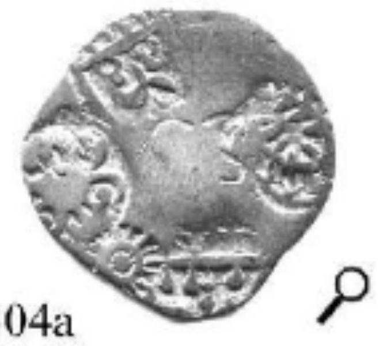
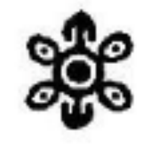
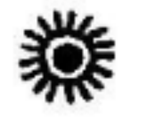
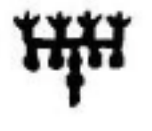
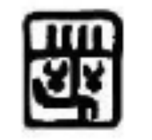
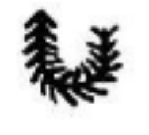
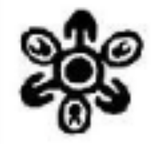
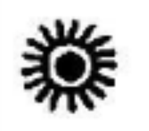
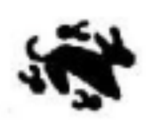
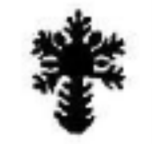
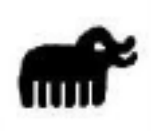
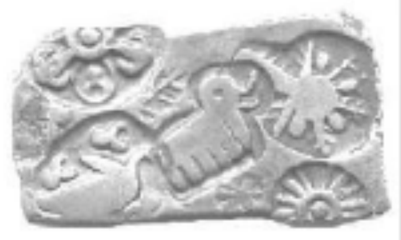
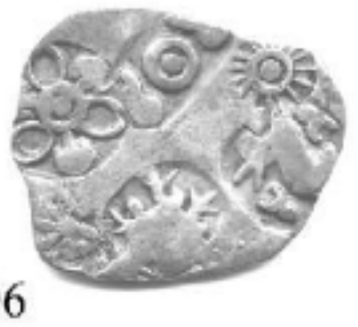
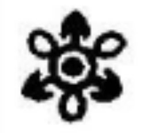
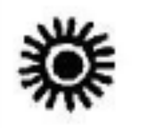
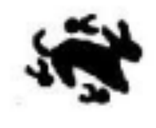
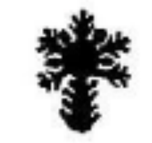
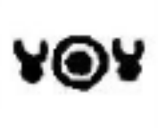
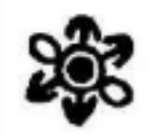
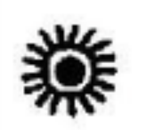
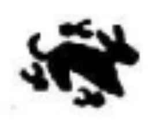
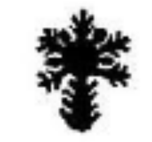
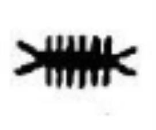
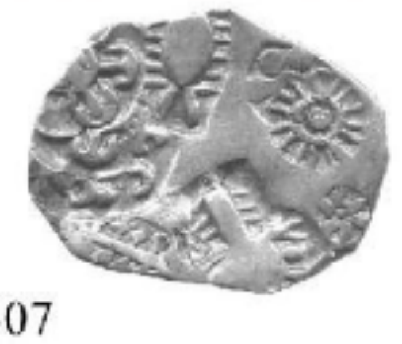
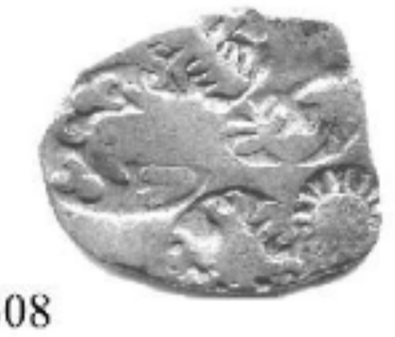
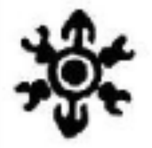
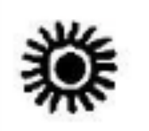
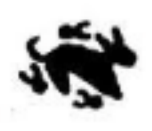
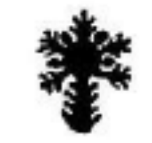
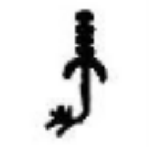
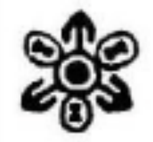
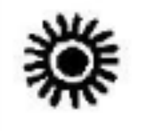
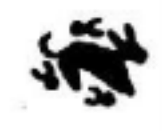
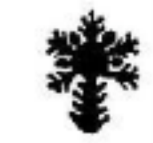
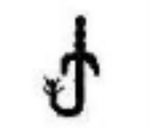
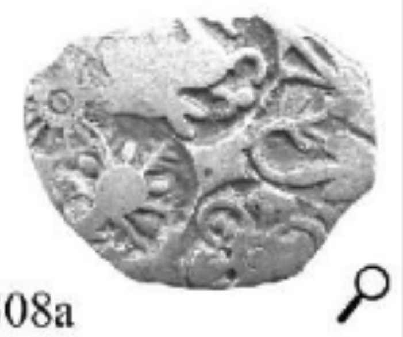
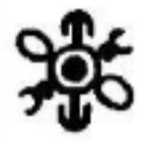
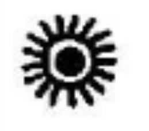
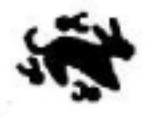
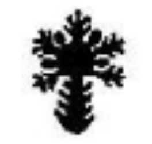
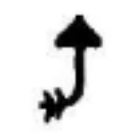
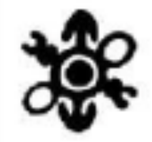
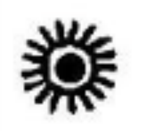
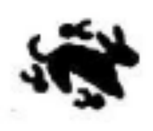
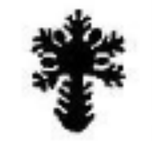
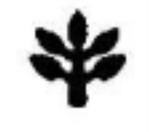
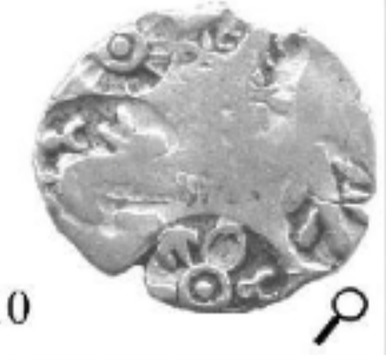
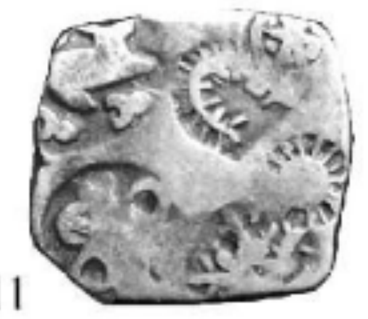
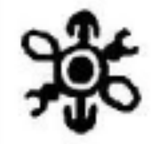
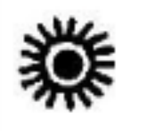
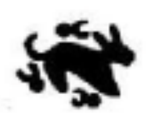
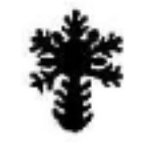
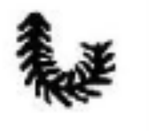
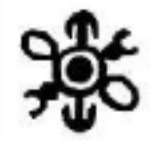
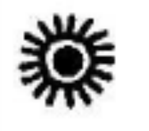
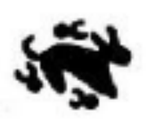
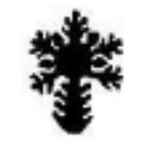
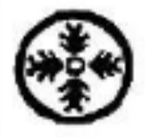
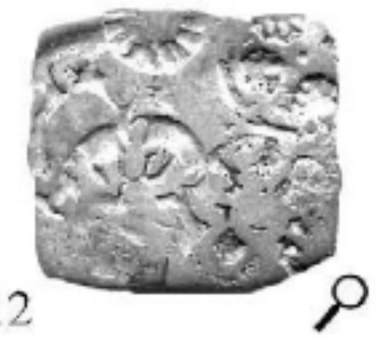
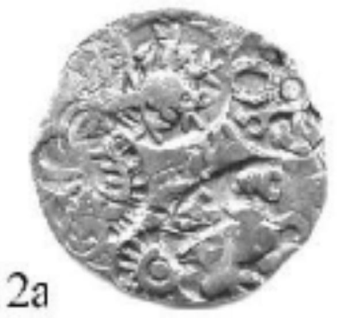
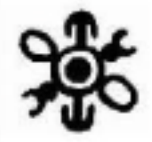
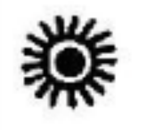
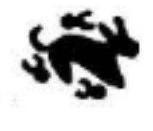
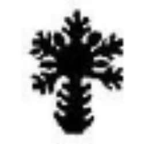
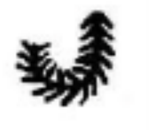
[1] There is doubt about mark 7. No complete example has been noted that could not be mark 6.

## SERIES III Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 302 | III III A 1<br>Am |  |  |  |  |  | N |  302 |  303 |
| 303 | III III A 2<br>Bh |  |  |  |  |  | VR | | |
| 304 | III III A 9<br>Am |  |  |  |  |  | VR |  304 |  304a |
| 304a | III III A 79<br>A |  |  |  |  |  | XR | | |
| 305 | III IV A 1<br>Am |  |  |  |  |  | XC |  305 |  306 |
| 306 | III IV A 2<br>Am |  |  |  |  |  | N | | |
| 307 | III IV A 3<br>Am |  |  |  |  |  | N |  307 |  308 |
| 308 | III IV A 6<br>Am |  |  |  |  |  | VR | | |
| 308* | III IV A 6a<br>A, M3325 |  |  |  |  |  | XR |  308a | no image available<br>309 |
| 309 | III IV A 7<br>Th |  |  |  |  |  [1] | XR | | |
| 310 | III IV A 9<br>Am |  |  |  |  |  | S |  310 |  311 |
| 311 | III IV A 79<br>Am |  |  |  |  |  | VR | | |
| 312 | III IV A 80<br>Am |  |  |  |  |  | R |  312 |  312a |
| 312a | III IV A 81<br>A |  |  |  |  |  | XR | | |

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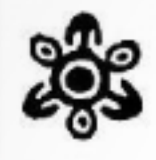
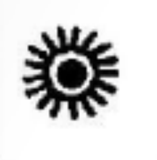
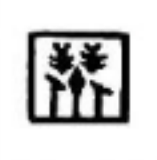
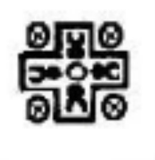
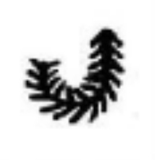
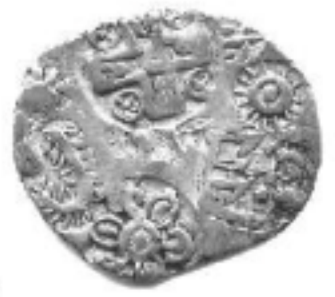
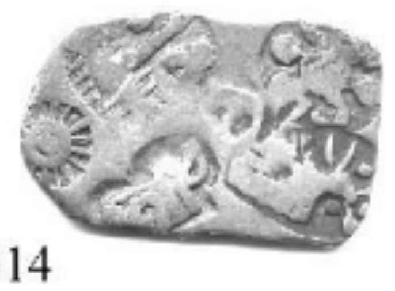
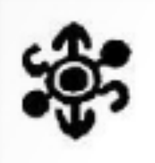
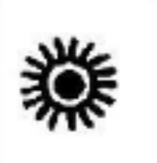
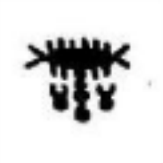
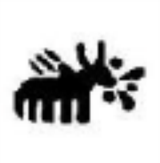
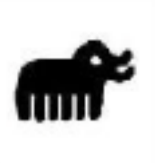
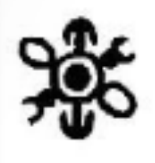
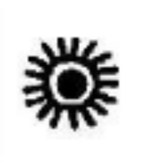
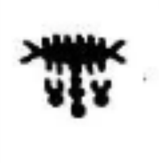
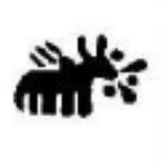
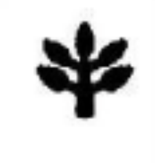
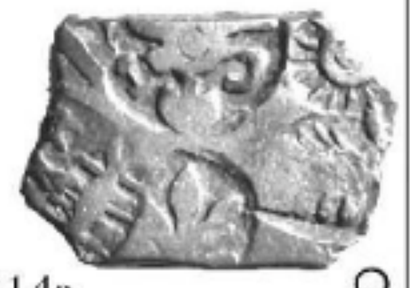
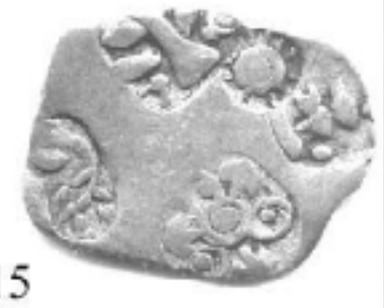
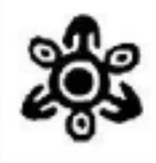
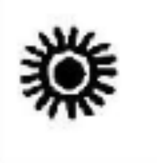
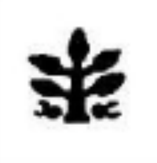
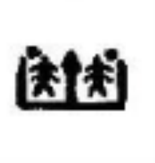
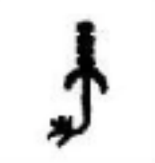
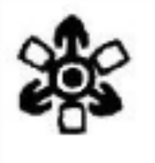
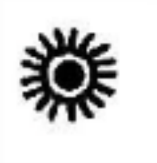
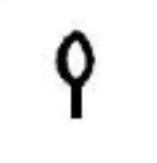
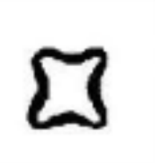
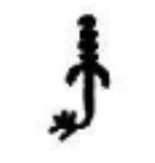
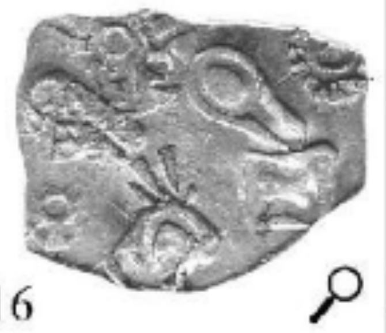
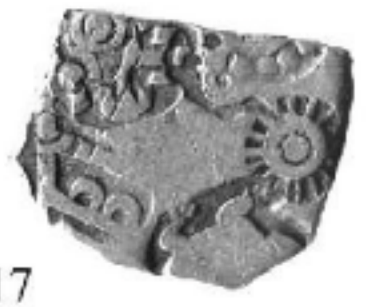
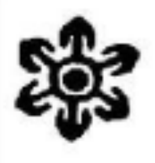
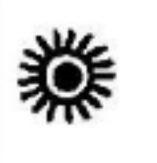
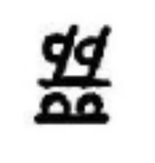
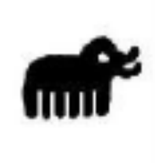
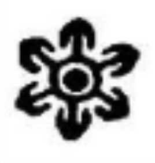
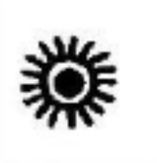
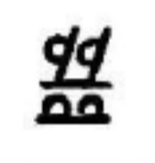
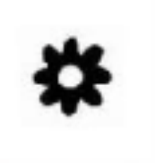
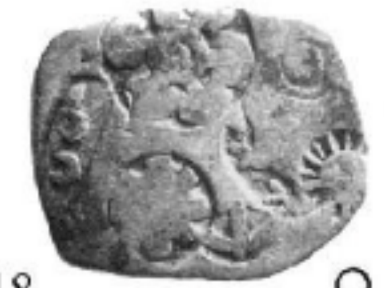
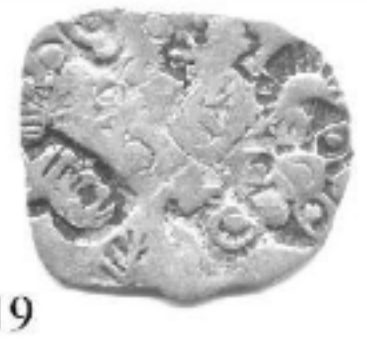
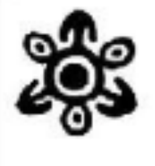
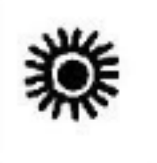
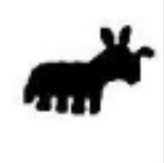
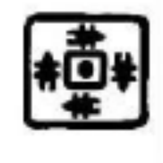
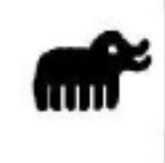
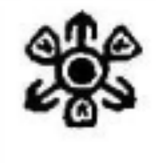
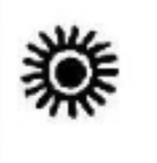
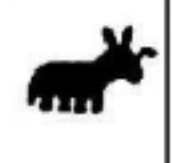
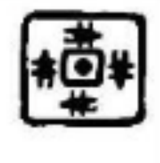
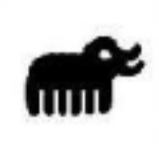
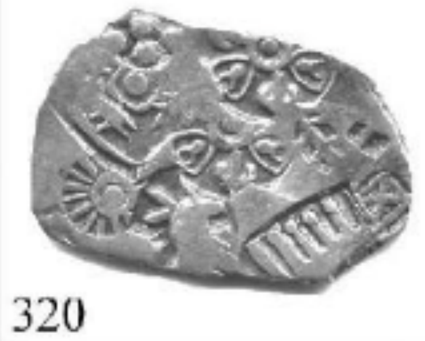
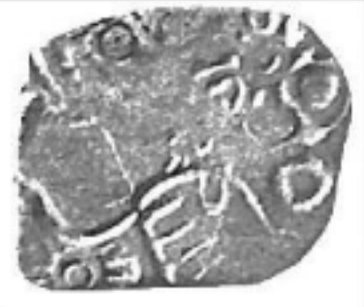
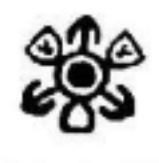
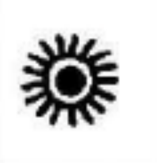
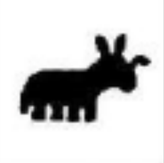
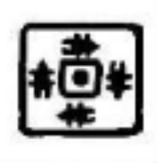
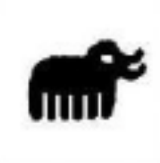
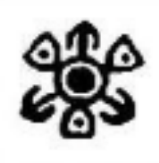
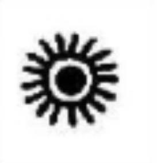
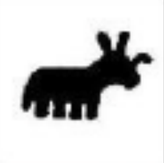
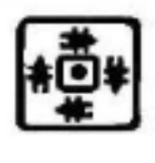
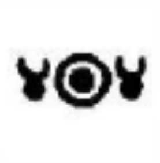
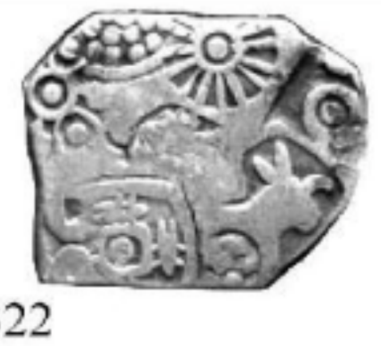
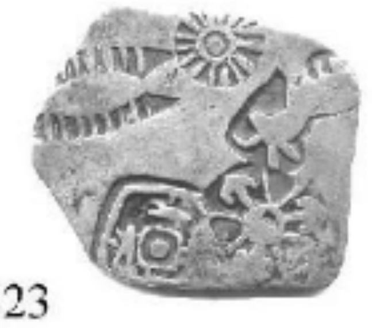
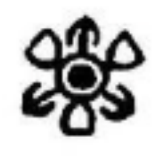
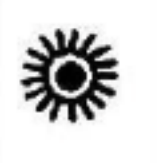
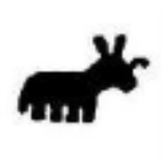
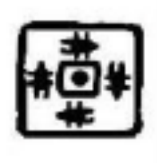
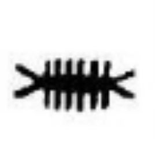
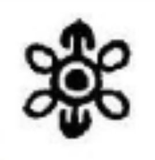
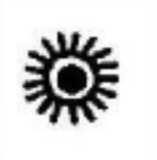
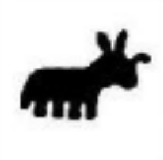
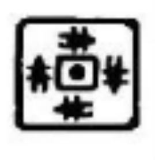
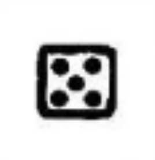
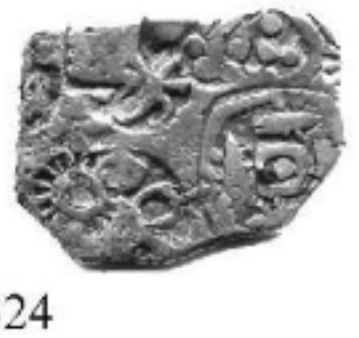
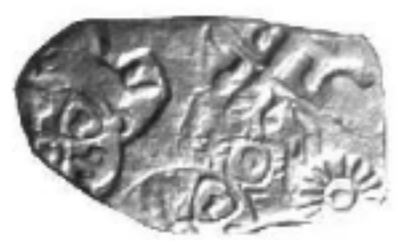
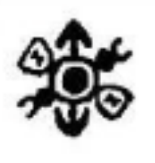
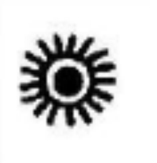
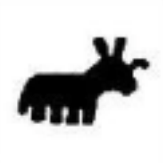
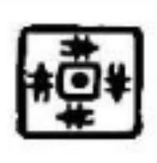
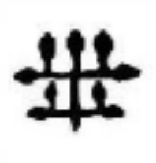
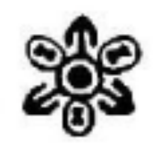
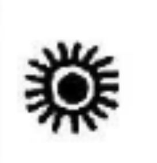
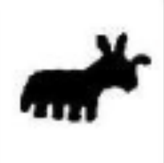
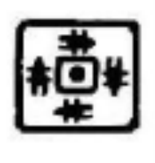
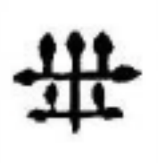
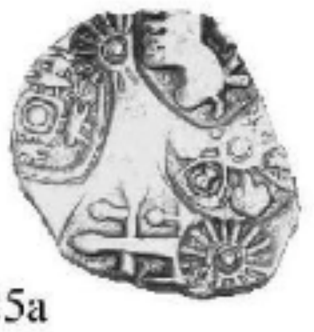
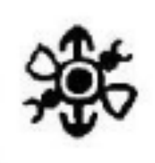
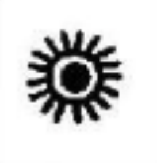
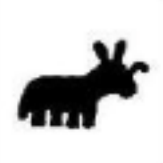
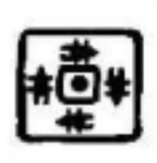
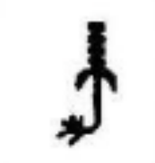
[1] There is doubt about mark 7. No complete example has been noted that could not be mark 6.

## SERIES III Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 313 | III V A 81<br>Am |  |  |  |  |  | R |  313 |  314 |
| 314 | III VI A 1<br>Am |  |  |  |  |  | R | | |
| 314a | III VI A 9<br>A |  |  |  |  |  | XR |  314a |  315 |
| 315 | III VII A 6<br>A |  |  |  |  |  | XR | | |
| 316 | III VIII A 6<br>A |  |  |  |  |  | XR |  316 |  317 |
| 317 | III IX A 1<br>BM |  |  | |  |  | R | | |
| 318 | III IX A 8<br>MM |  |  | |  |  | VR |  318 |  319 |
| 319 | III X A 1<br>Am |  |  |  |  |  | S | | |
| 320 | III X A1*<br>Am |  |  |  |  |  | XC |  320 |  321 |
| 321 | III X A 1**<br>Am |  |  |  |  |  | XR | | |
| 322 | III X A 2<br>Am |  |  |  |  |  | C |  322 |  323 |
| 323 | III X A 3<br>Am |  |  |  |  |  | S | | |
| 324 | III X A 4<br>Am |  |  |  |  |  | VR |  324 |  325 |
| 325 | III X A 5<br>Am |  |  |  |  |  | VR | | |
| 325a | III X A 5*<br>SS |  |  |  |  |  | XR |  325a | no image available<br>326 |
| 326 | III X A 6<br>Ram |  |  |  |  |  | XR | | |

## SERIES III Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
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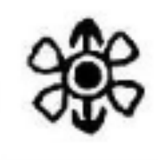
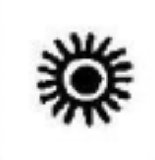
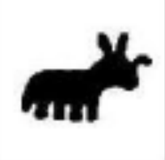
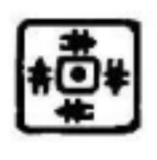
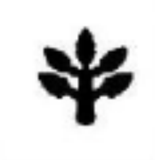
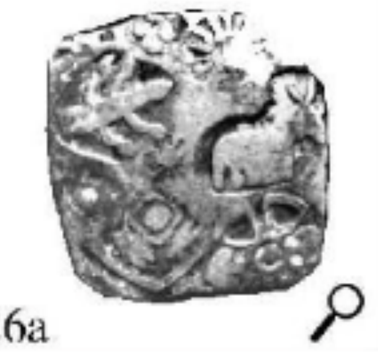
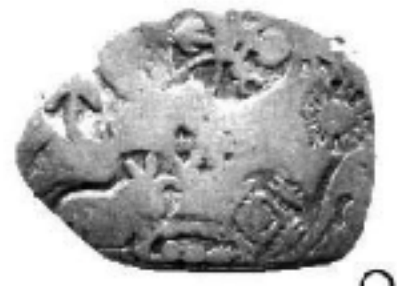
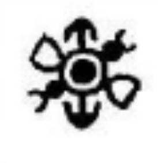
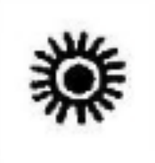
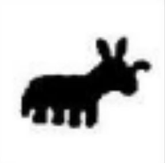
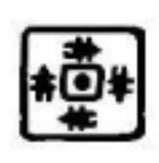
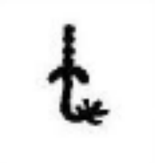
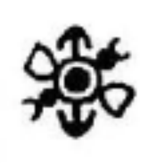
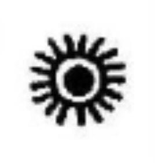
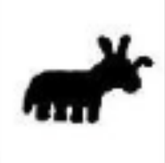
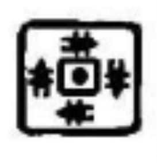
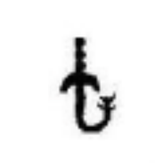
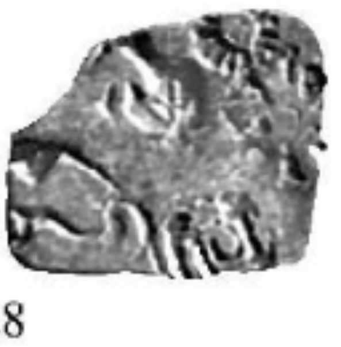
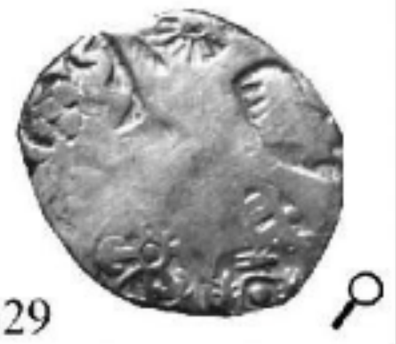
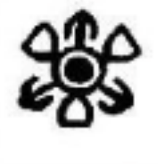
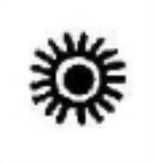
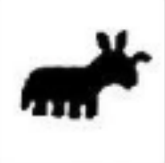
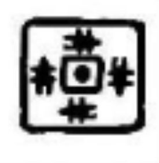
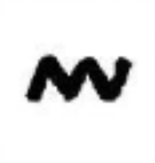
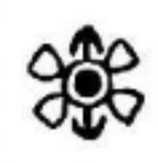
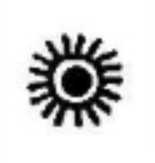
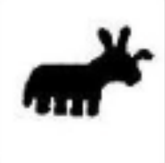
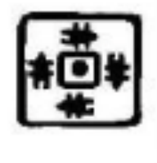
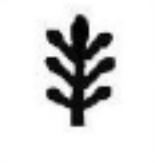
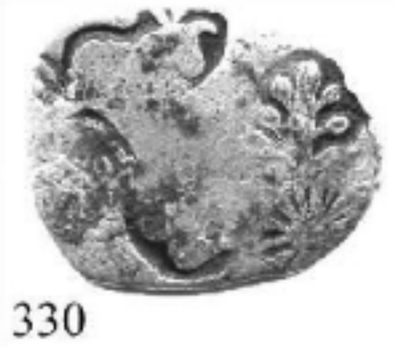
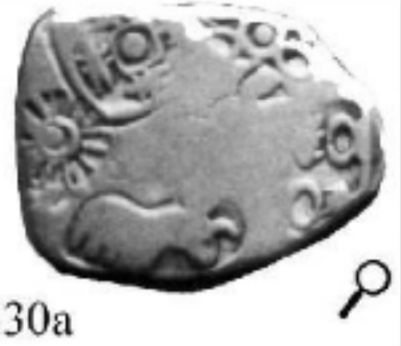
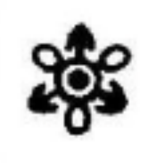
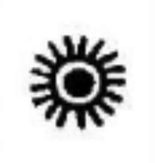
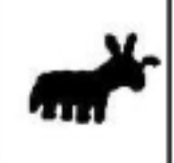
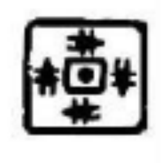
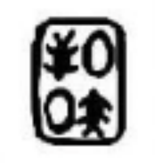
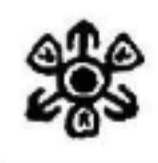
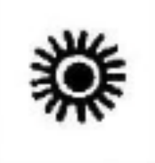
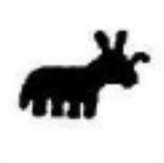
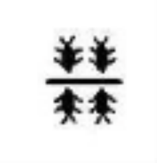
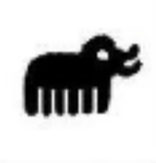
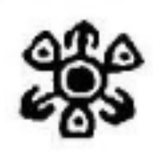
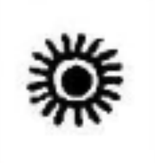
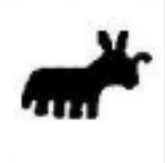
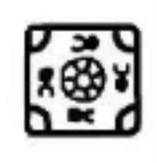
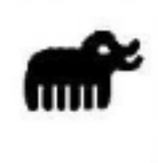
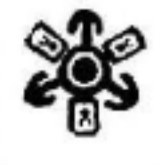
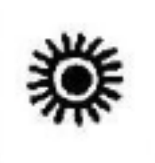
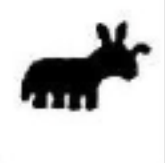
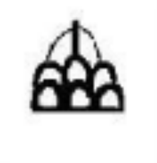
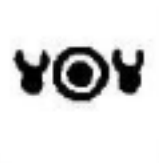
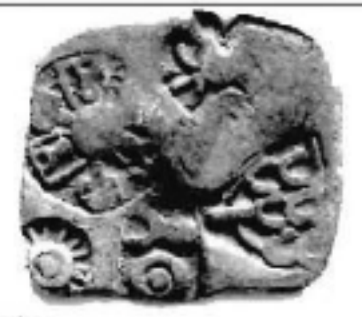
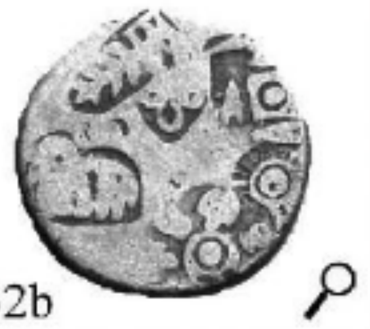
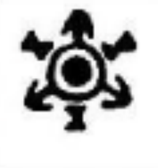
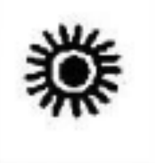
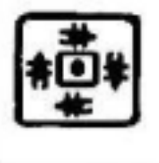
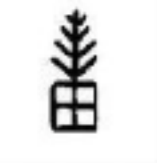
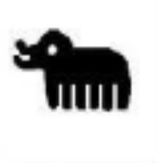
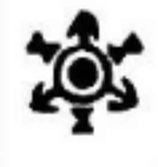
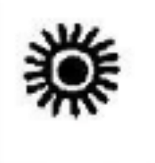
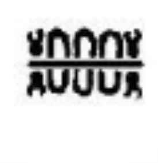
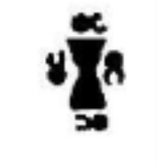
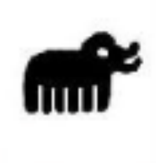
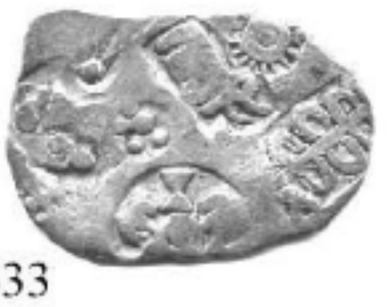
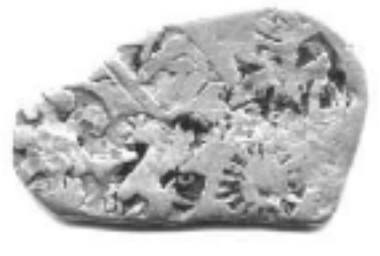
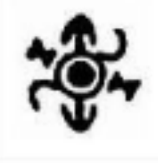
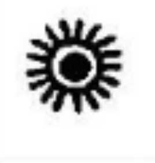
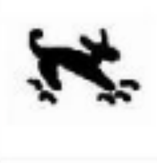
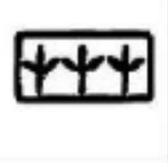
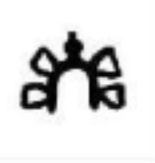
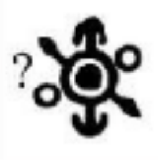
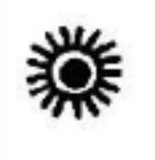
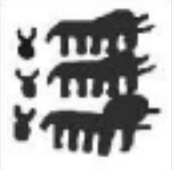
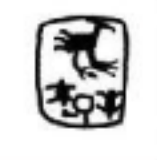
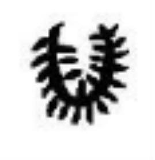
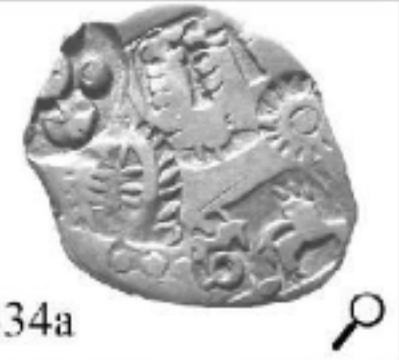
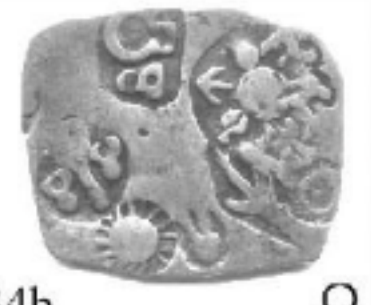
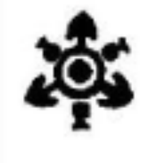
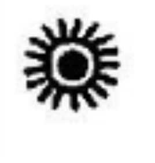
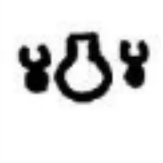
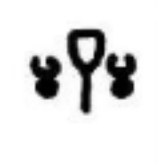
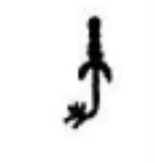
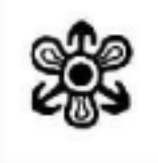
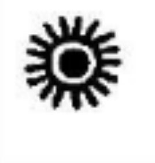
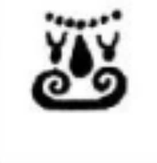
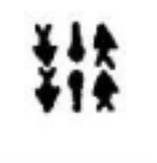
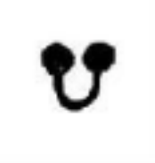
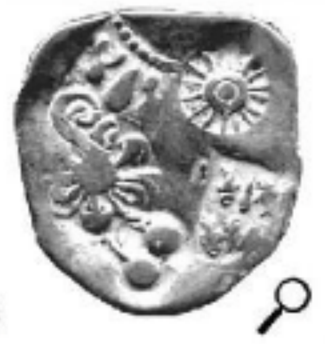
| 326a | III X A 9<br>M3361 |  |  |  |  |  | XR |  326a |  327 |
| 327 | III X A 10<br>Am |  |  |  |  |  | R | | |
| 328 | III X A 10a<br>Am |  |  |  |  |  | R |  328 |  329 |
| 329 | III X A 12<br>Am |  |  |  |  |  | XR | | |
| 330 | III X A 77<br>Am |  |  |  |  |  | VR |  330 |  330a |
| 330a | III X A 578<br>RT |  |  |  |  |  | XR | | |
| 331 | III X B 1<br>Ve |  |  |  |  |  | XR | no image available<br>331 | no image available<br>332 |
| 332 | III X C 1<br>Bh |  |  |  |  |  | XR | | |
| 332a | III X D 2<br>MZ |  |  |  |  |  | XR |  332a |  332b |
| 332b | III X E 36<br>PT |  |  |  |  |  | XR | | |
| 333 | III XI A 1<br>A |  |  |  |  |  | XR |  333 |  334 |
| 334 | III XII A 78<br>A |  |  |  |  |  | XR | | |
| 334a | III XIII A 79a<br>SS | ?  |  |  |  |  | XR |  334a |  334b |
| 334b | III XIV A 6<br>A |  |  |  |  |  | XR | | |
| 334c | III XV A 588<br>MZ |  |  |  |  |  | XR |  334c | |
| | | | | | | | | | |

## Series IV

Coins of intermediate size whose class mark often embodies some aspect of arches (either three, five or six) on a base, usually in conjunction with other symbols, but excluding the simple three arches and crescent of later series. A relatively high proportion of coins in this series (though still small) show 'no image available' in the photo boxes, indicating that the original alleged type is unavailable and no new example has turned up in thirty or more years. Where such coins come from old hoards classified with the more limited knowledge of scholars in the distant past, it must now be considered possible that some of them simply represent mis-identifications.

Series IV is subdivided into four subseries, as follows.

**IVa.** Types which restrike Series II coins but with arches in the class mark. This short subseries of mostly rare coins is an extension of Series III with only the class mark as a distinguishing factor. Their chronological position in relation to Series III may be contemporary or slightly later; they would seem to represent the earliest segment of the Series IV coinage. Two types placed tentatively in Series IVa (352 and 353) present conflicting chronological data. Both are seen to overstrike Series II coins and thus by definition belong in Series IVa, but they introduce a class mark of 'plant on arches' that is seen as a part of the long series of class marks firmly rooted in Series IVd. They might thus be indicating that they stand at the transition point between Series IVa and IVd. If IVa is followed directly by IVd, the chronological place of IVb and c in the Series IV sequence would be unclear, implying that IVb and IVc may represent geographically separate areas in parallel time. The evidence from six-armed symbols discussed below would support this.

**IVb.** From here on coins do not restrike earlier types and probably belong to a later period. IVb have no arches in the class mark, are of intermediate size (18-24 mm), and do not yet bear miniature reproductions of official marks on the reverse, except on stray coins. In this subseries, the normal rule governing Class (third) and Group (fourth) marks, where the Class mark remains constant while the Group mark varies, is not always followed. In the latter part of the classification, the bull, which is most often seen as a fourth mark, remains constant while the third mark varies.

In Series IVb (Type 379b) and IVc (Types 397a-c) we see what may be the prototypes for the extensive classes adopted in IVd with arches capped by animals and other symbols. However in these early types the bull and dog are drawn in a different, less assured style.

Once again coins in this subseries are mostly rare.

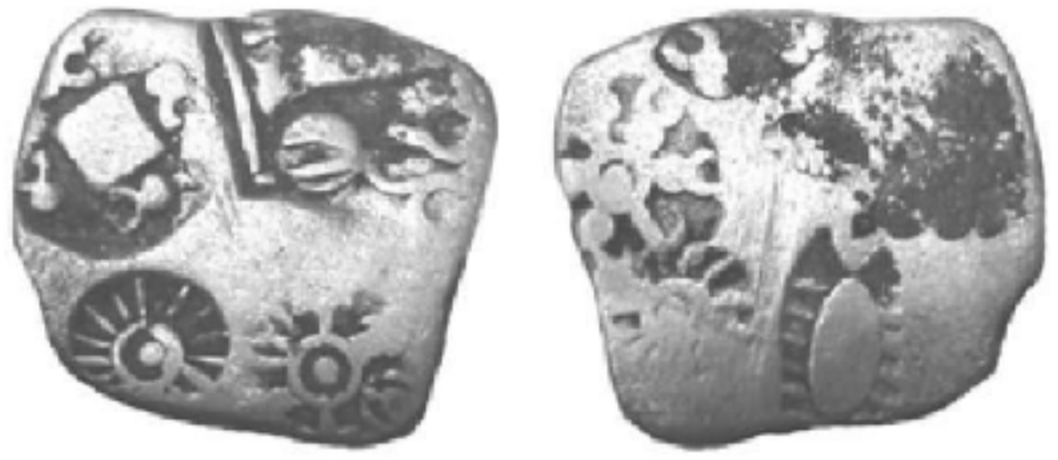


Fig. 41: Double obverse coin (U29) with affinities to IVc group XXVII struck on Series II Type 278

**IVc.** A small group of mainly very rare coins with arches in the class mark, but still without miniature marks. The types included in IVb and IVc appear from hoard evidence and from the lack of miniature marks to fall chronologically after the restriking but before Series IVd, but the exact chronological relationship between IVb and IVc is undetermined: they may be roughly contemporary.

A remarkable double obverse coin from the collection of Bryan Birch, (Fig. 41) suggests that the coins of IVc group XXVII, Types 390-394, may belong in Series IVa rather than IVc as originally attributed. However as neither the new or the old obverses are clear, further examples would be needed before this can be confirmed, and the coin remains in the 'Unclear Coins' section as U29.

**IVd.** Coins with arches in the class mark, and with miniature marks on the reverse of approximately one in three coins. This is a lengthy subseries containing many common types. The system of holding Class marks constant while Group marks vary, accompanied by large numbers of fifth marks, is at its most robust here. Even though the overall standard of workmanship is high, there seems to be a greater-than-average number of occasions where the 'wrong' six-armed symbol is used (i.e. a single coin has been noticed where the usual mark is replaced by another). Although they are probably mint errors, these are included in the Catalogue with the suffix '*' to distinguish them from ordinary varieties.

### Six-armed symbols as an aid to chronology in Series IV

Further insight into the chronology within Series IV is provided by the way in which use of the six-armed symbol progresses (Tables 24 and 25). Table 24 breaks down six-armed symbol usage in Series IVa to IVd. Of those unique to Series IV (excluding those also used in other Series) only four symbols cross subseries boundaries. That suggests the segmentation employed in our classification of Series IV probably has rough, but not exact, chronological validity. In particular Series IVd stands as a separate group with only one symbol borrowed from an earlier subseries, while Series IVb and IVc may be contemporary. Table 25 displays the six-armed symbols' 'births and deaths', arranged to show the pattern of usage sequentially from IVa to IVd. It shows in a more graphic way the degree to which parts of IVa and IVd are isolated from other subseries, and the amount of overlap in the middle of the Series.

| Series | Six-armed symbols used | Total |
|---|---|---|
| **IVa only** | **429,430, 431, 432, 433** | **5** |
| IVa&IVb | 435 | 1 |
| IVa, b & c | 434 | 1 |
| **IVb only** | **436,437, 438** | **3** |
| IVb&IVd | 440,442 | 2 |
| **IVc only** | **441,443** | **2** |
| **IVd only** | **444,445,446,447,448,449,450** | **7** |
| **Total number of six-armed symbols used exclusively in Series IV** | | **21** |
| IV + other Series | 377,384,392,393,402,407,409,410,414,417,419,427,439 | 14 |

Table 24: Use of six-armed symbols in Series IV. The bottom row lists the 14 six-armed symbols used in Series IV that are also in use in other Series

If each subseries were to contain its own unique six-armed symbols with no intermixing, a stronger case might be made for them being mint signatures, but the cross-usage seen in Table 24 does not support the mint signature theory.

In conclusion, the six-armed symbols support the case for the chronological separation of the four subseries in Series IV, but they show no clear sign that they represent separate mints.

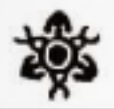
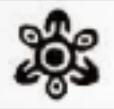
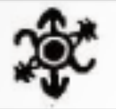
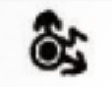
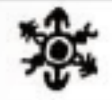
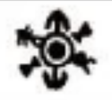
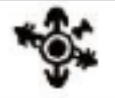
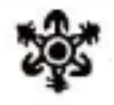
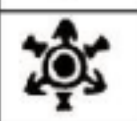
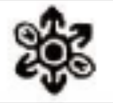
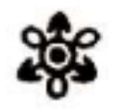
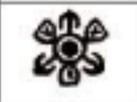
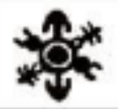
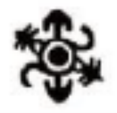
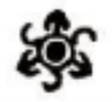
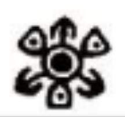
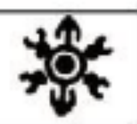
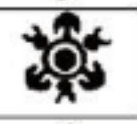
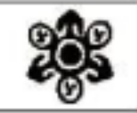
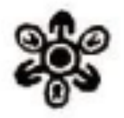
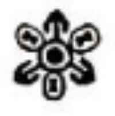
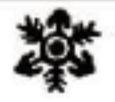
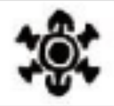
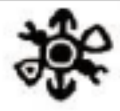
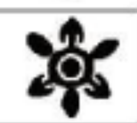
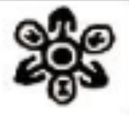
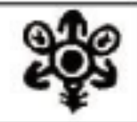
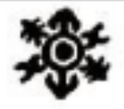
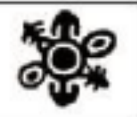
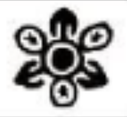
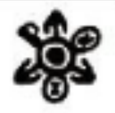
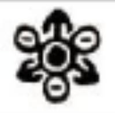
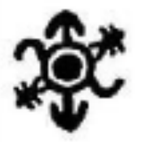
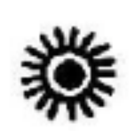
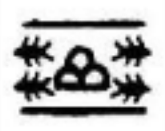
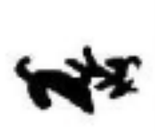
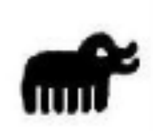
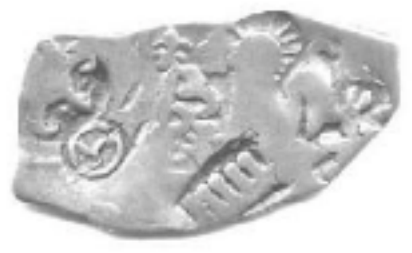
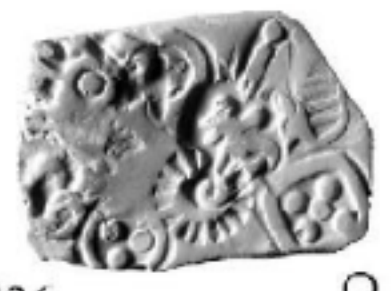
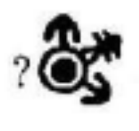
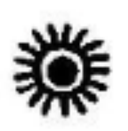
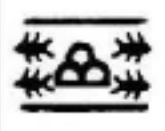
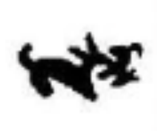
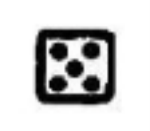
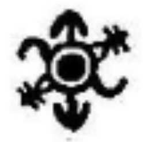
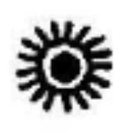
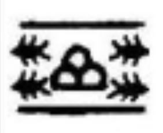
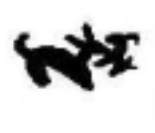
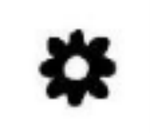
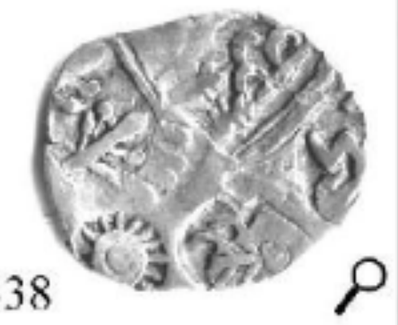
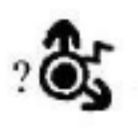
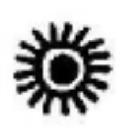
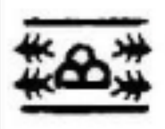
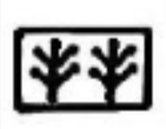
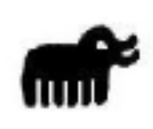
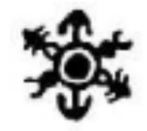
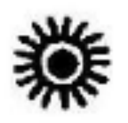
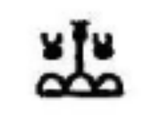
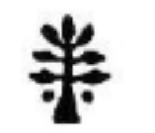
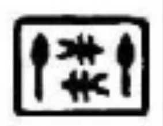
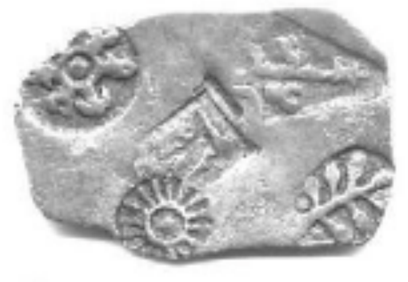
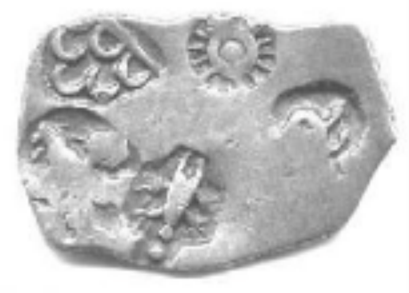
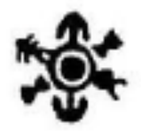
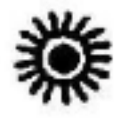
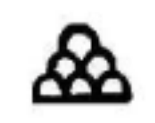
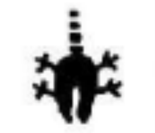
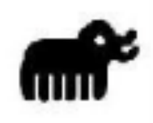
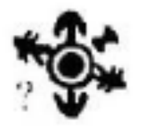
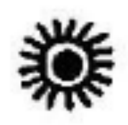
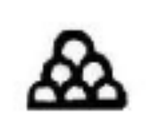
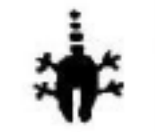
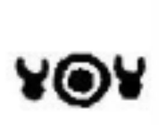
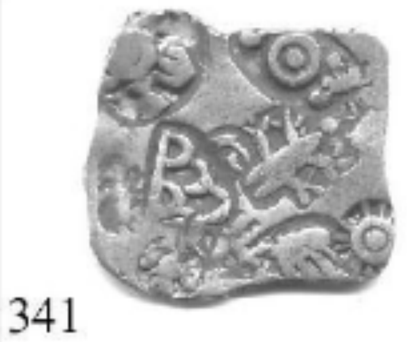
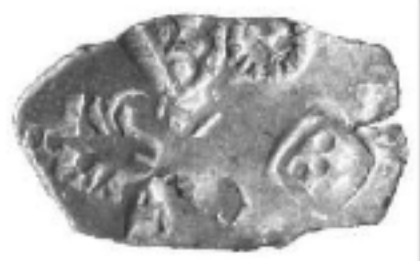
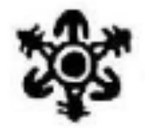
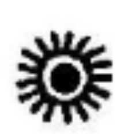
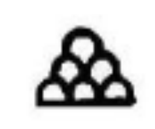
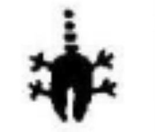
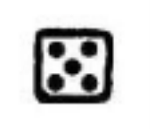
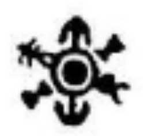
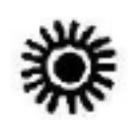
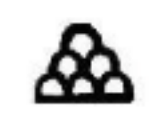
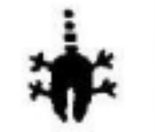
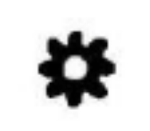
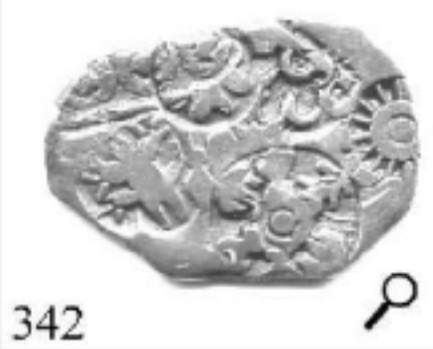
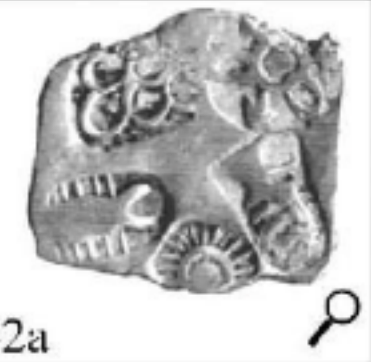
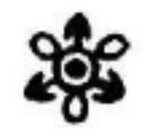
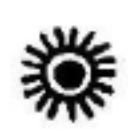
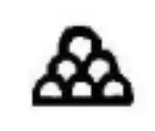
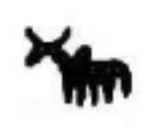
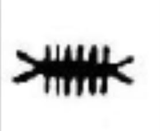
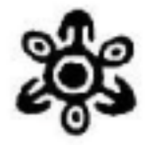
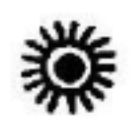
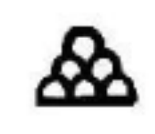
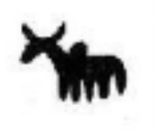
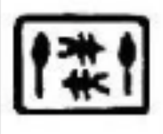
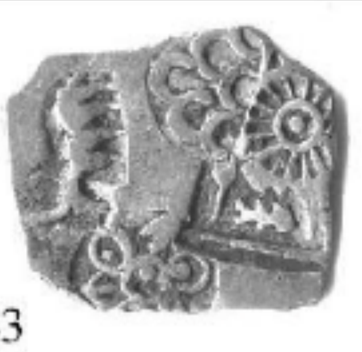
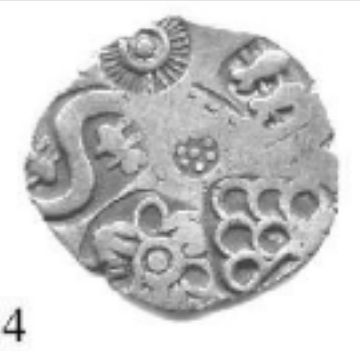
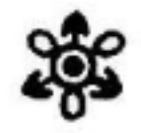
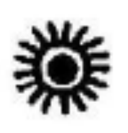
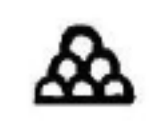
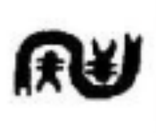
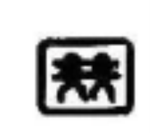
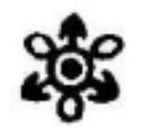
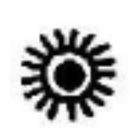
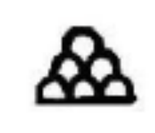
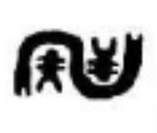
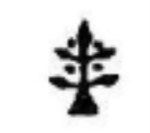
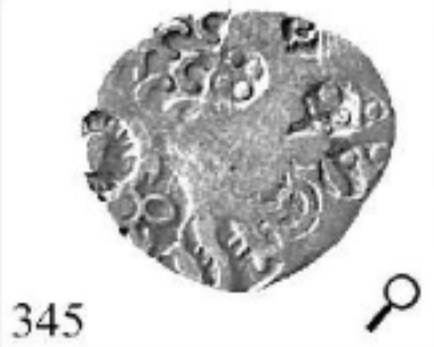
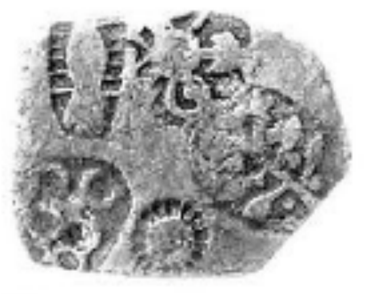
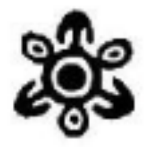
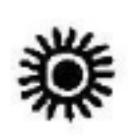
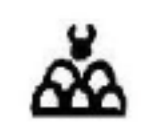
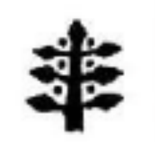
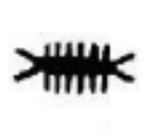
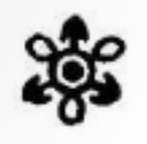
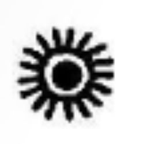
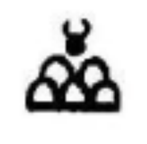
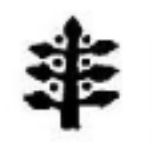
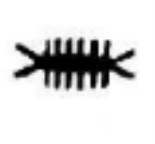
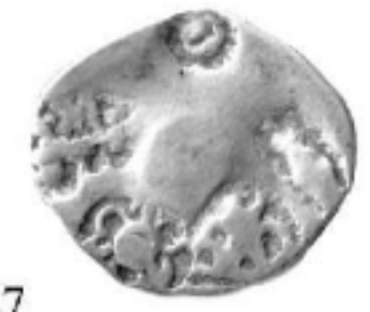
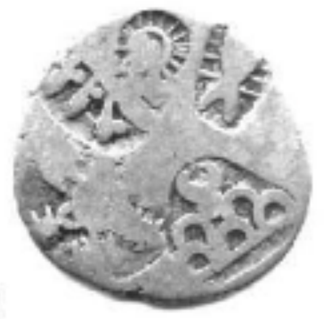
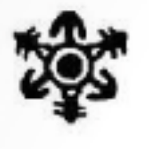
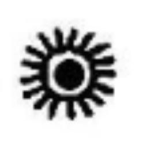
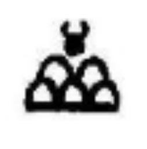
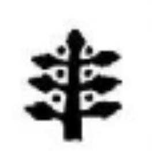
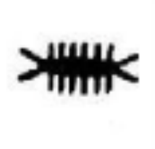
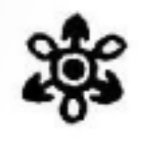
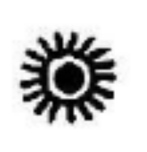
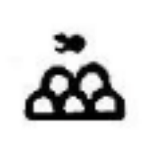
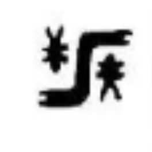
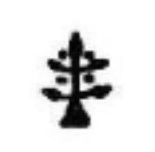
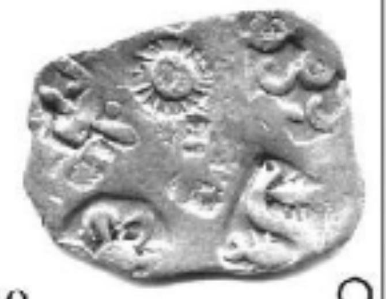
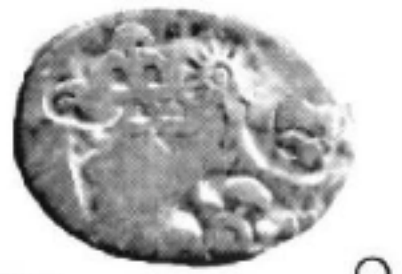
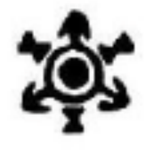
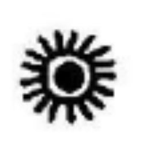
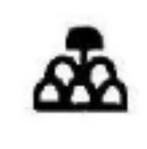
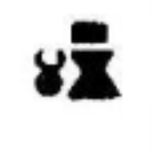
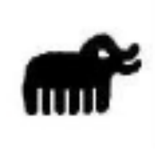
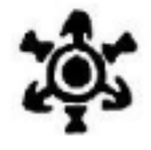
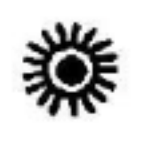
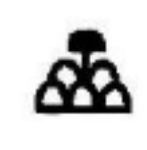
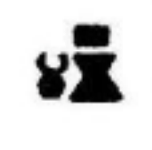
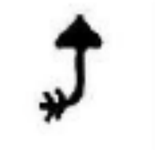
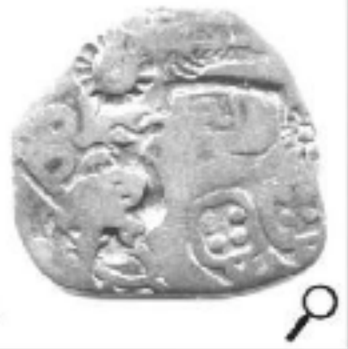
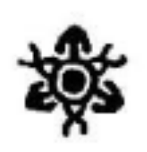
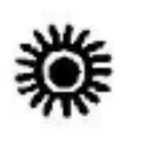
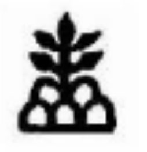
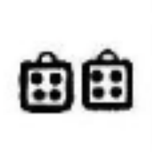
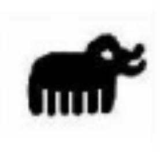
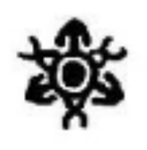
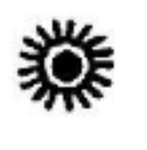
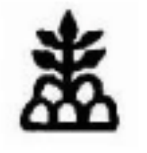
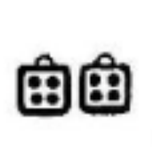
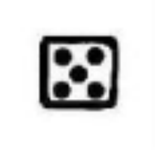
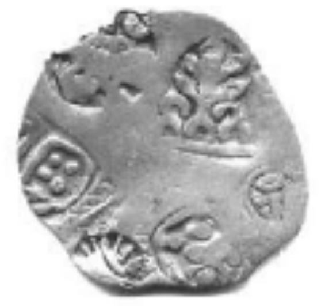
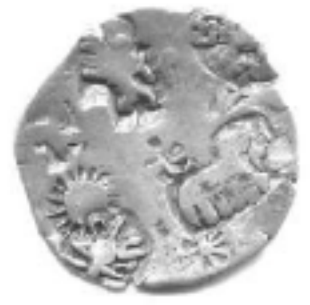
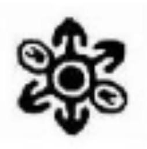
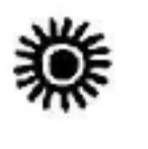
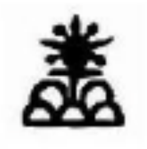
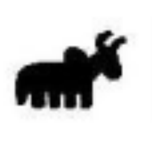
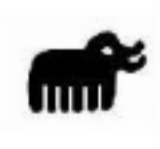
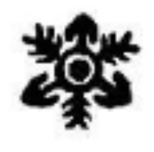
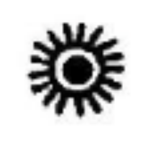
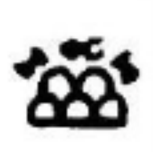
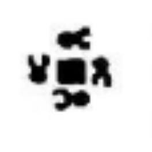
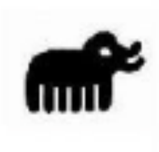
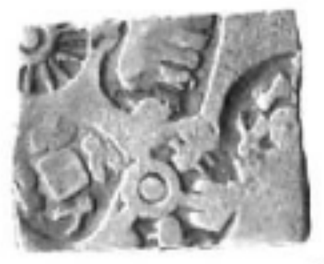
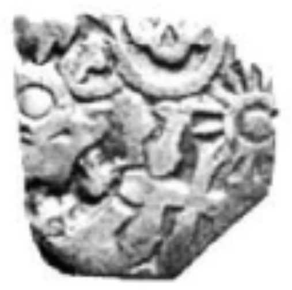
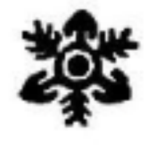
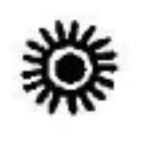
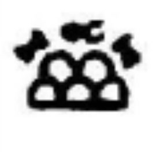
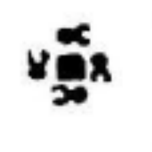
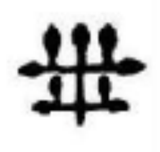
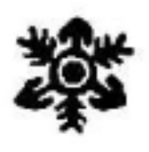
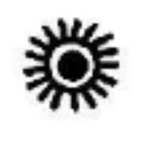
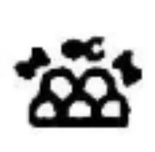
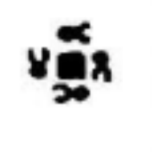
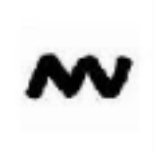
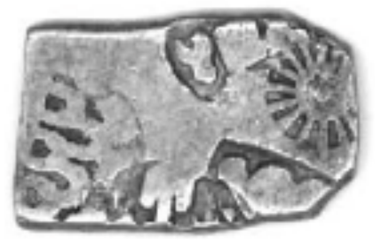
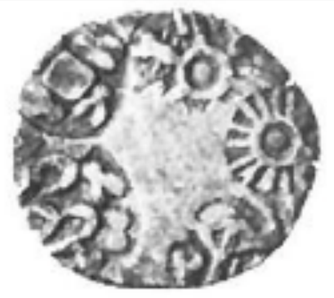
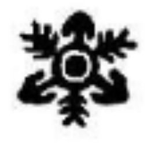
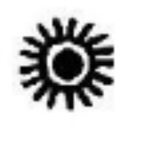
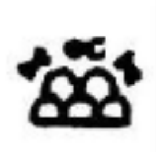
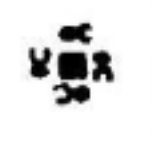
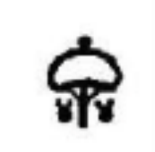
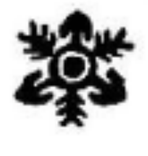
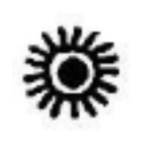
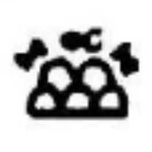
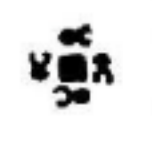
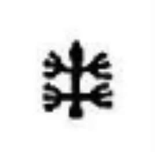
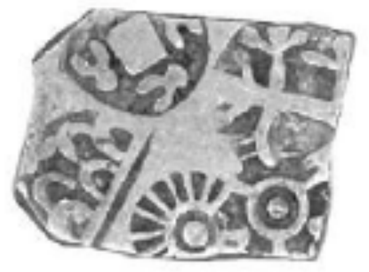
| Type Nos. | Sym -bol No. | Sym-bol | Occurrence | | | |
|---|---|---|---|---|---|---|
| | | | IVa | IVb | IVc | IVd |
| 352-353 | 407 |  | ▨ * | | | |
| 343, 346 | 419 |  | ▨ * | | | |
| 335, 337 | 429 |  | ▨ | | | |
| 338 | 430 |  | ▨ | | | |
| 339 | 431 |  | ▨ | | | |
| 340, 342 | 432 |  | ▨ | | | |
| 341 | 433 |  | ▨ | | | |
| 341a, 348, 376, 380, 380a, 422a | 434 |  | ▨ | ▨ | | ▨ |
| 350-51, 366, 384, 395, 462 | 427 |  | ▨ * | ▨ * | ▨ * | ▨ * |
| 354, 369 | 435 |  | ▨ | ▨ | | |
| 342a, 344-45, 347, 349, 359-65, 375, 398, 405, 417, 420a, 464-66 | 377 |  | ▨ * | ▨ * | | ▨ * |
| 383, 476a | 421 |  | | ▨ * | | ▨ * |
| 355 | 436 |  | | ▨ | | |
| 357 | 437 |  | | ▨ | | |
| 358 | 438 |  | | ▨ | | |
| 371 | 414 |  | | ▨ * | | |
| 356 | 393 |  | | ▨ * | | |
| 366a, 372, 447, 473, 476d | 392 |  | | ▨ * | | ▨ * |
| 379, 475-76 | 440 |  | | ▨ | | ▨ |
| 367-68, 373, 381-82, 396, 416, 418-38, 441a, 450-61a | 417 |  | | ▨ * | ▨ * | ▨ * |
| 374, 374a, 377, 385, 410-15, 472 | 439 |  | | ▨ * | ▨ * | ▨ * |
| 390-94, 439-41 | 442 |  | | ▨ | | ▨ |
| 386-89 | 441 |  | | | ▨ | |
| 397-397b | 443 |  | | | ▨ | |
| 449 | 384 |  | | | | ▨ * |
| 398-404 | 444 |  | | | | ▨ |
| 406-08 | 445 |  | | | | ▨ |
| 442-46 | 446 |  | | | | ▨ |
| 448 | 447 |  | | | | ▨ |
| 463 | 448 |  | | | | ▨ |
| 467-71 | 449 |  | | | | ▨ |
| 474 | 450 |  | | | | ▨ |

Table 25: Series IV six-armed symbols births and deaths. Grey shadow indicates presence in the subseries. *indicates a symbol also used in other Series

## SERIES IVa Catalogue

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 335 | IV I A 1<br>Am |  |  |  |  |  | R |  335  336 |
| 336 | IV I A 4<br>A | ?  |  |  |  |  | XR | |
| 337 | IV I A 8<br>Bh |  |  |  |  |  | XR | no image available 337  338 |
| 338 | IV I B 1<br>Am | ?  |  |  |  |  | VR | |
| 339 | IV II A 215<br>A |  |  |  |  |  | XR |  339  340 |
| 340 | IV III A 1<br>Am |  |  |  |  |  | R | |
| 341 | IV III A 2<br>A | ?  |  |  |  |  | XR |  341  341a |
| 341a | IV III A 4<br>BB |  |  |  |  |  | XR | |
| 342 | IV III A 8<br>Am |  |  |  |  |  | VR |  342  342a |
| 342a | IV III B 3<br>BM |  |  |  |  |  | XR | |
| 343 | IV III B 215<br>Am |  |  |  |  |  | VR |  343  344 |
| 344 | IV III C 83<br>Am |  |  |  |  |  | C | |
| 345 | IV III C 84<br>Am |  |  |  |  |  | VR |  345  346 |
| 346 | IV IV A 3<br>Am |  |  |  |  |  | XR | |

## SERIES IVa Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 347 | IV IV A 3*[1]<br>Bh |  |  |  |  |  | XR |  347 |  348 |
| 348 | IV IV A 3**<br>A [1] |  |  |  |  |  | XR | | |
| 349 | IV V A 84<br>A |  |  |  |  |  | VR |  349 |  350 |
| 350 | IV VI A 1<br>Am |  |  |  |  |  | XR | | |
| 351[2] | IV VI A 7<br>Am |  |  |  |  |  | XR | no image available<br>351 |  352 |
| 352 | IV VII A 1[3]<br>Bh |  |  |  |  |  | XR | | |
| 353 | IV VII A 4[3]<br>BM |  |  |  |  |  | XR |  353 |  354 |
| 354 | IV VIII A 1<br>A |  |  |  |  |  | XR | | |
| 390[4] | IV XXVII A 1<br>Am |  |  |  |  |  | VR |  390 |  391 |
| 391[4] | IV XXVII A 5<br>BM |  |  |  |  |  | XR | | |
| 392[4] | IV XXVII A 12<br>Am |  |  |  |  |  | R |  392 |  393 |
| 393[4] | IV XXVII A 90<br>Am |  |  |  |  |  | VR | | |
| 394[4] | IV XXVII A 91<br>Bh |  |  |  |  |  | XR |  394 | |
| | | | | | | | | | |

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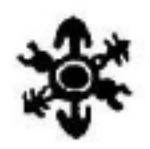
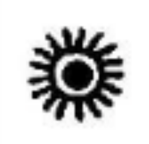
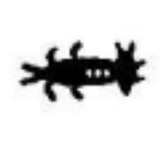
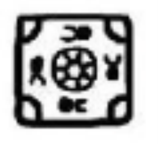
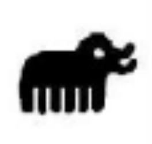
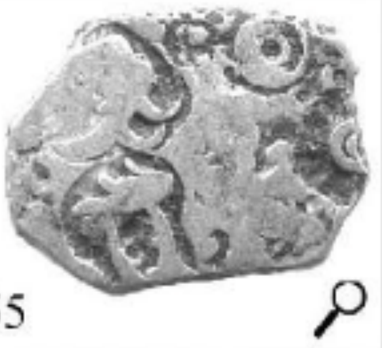
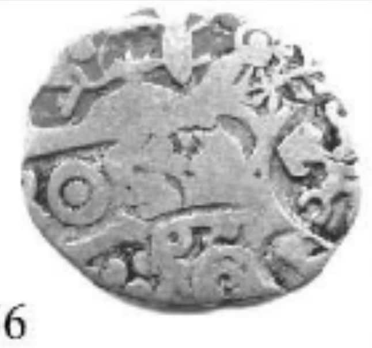
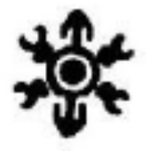
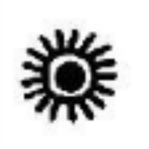
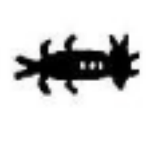
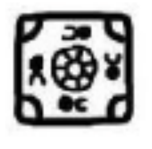
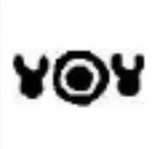
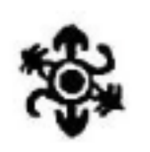
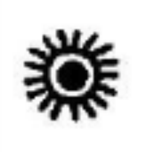
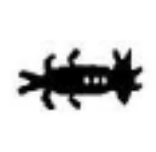
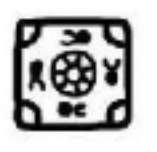
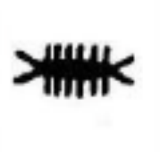
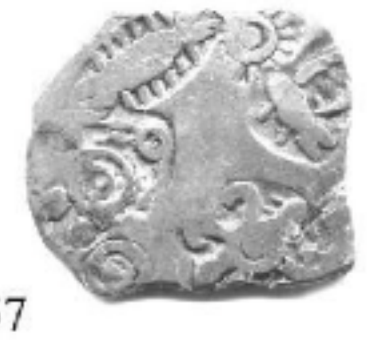
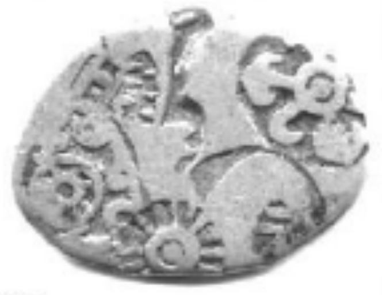
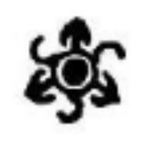
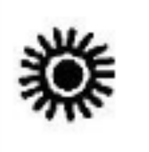
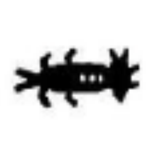
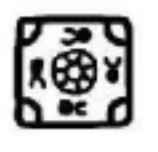
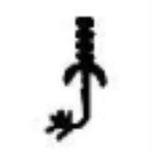
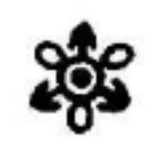
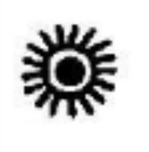
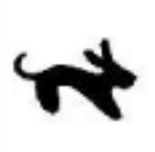
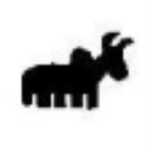
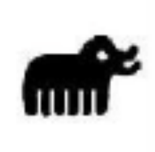
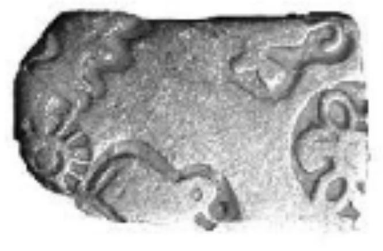
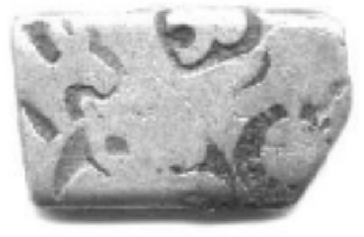
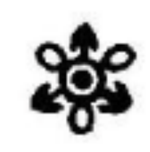
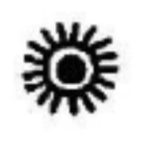
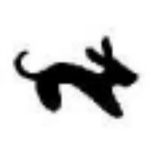
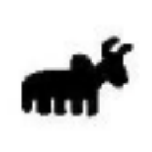
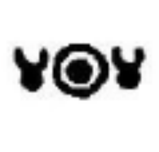
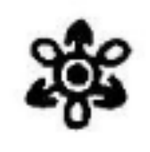
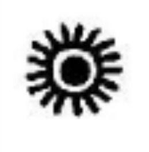
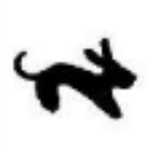
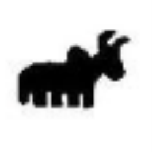
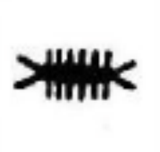
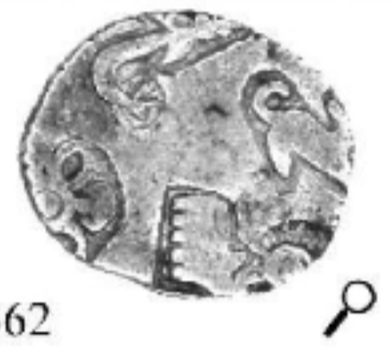
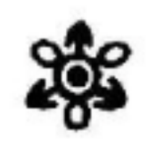
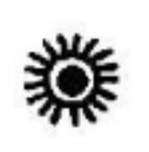
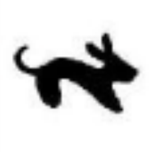
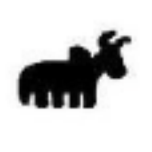
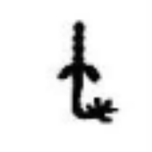
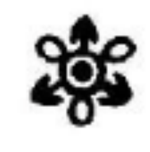
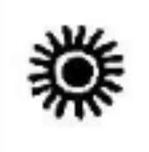
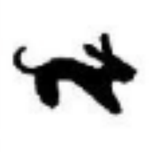
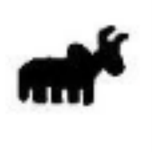
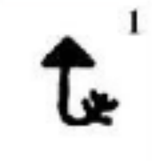
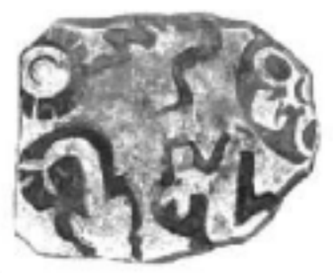
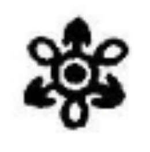
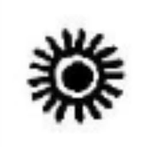
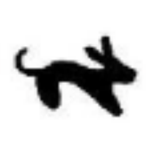
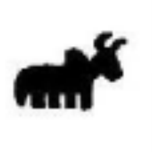
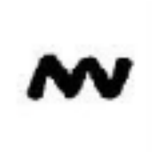
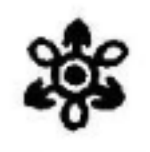
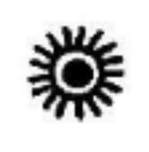
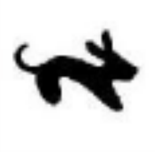
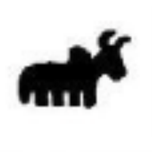
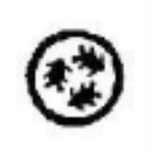
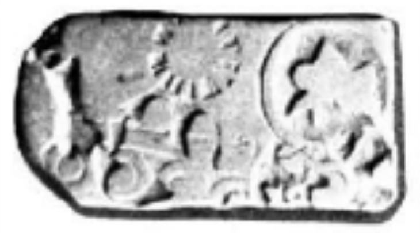
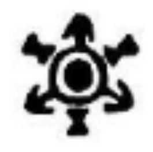
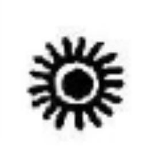
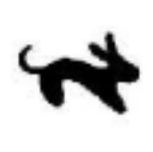
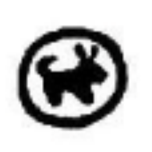
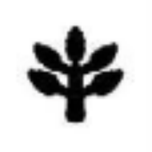
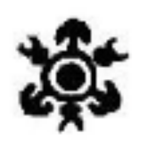
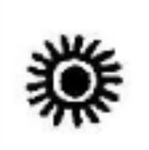
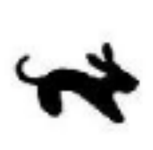
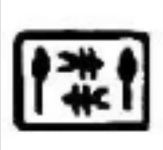
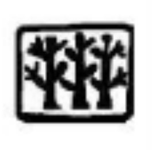
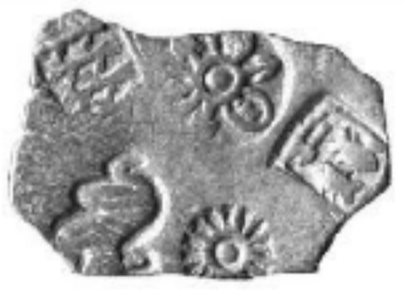
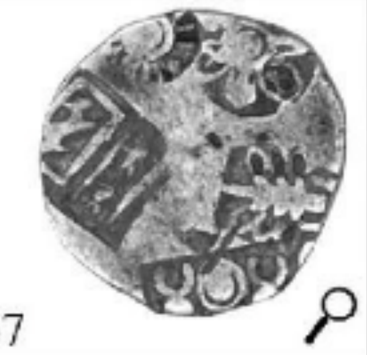
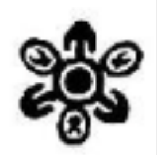
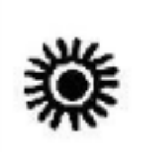
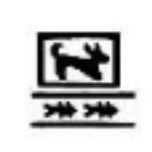
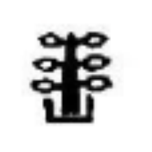
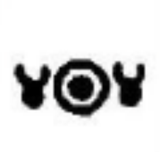
[1] Variant in six-armed symbol [2] The plates in the Amaravati Catalogue (coins 256 and 257) do not appear to show this type, which has not recurred so must be tentative. [3] These two types use a third mark of Series IVd but are seen overstriking coins of Series II.

[4] Types 390-394 are transferred from Series IVc. A coin of this class in the Unclear Coins section (U 28) is restruck on Type 278 suggesting the class belongs in Series IVa.

## SERIES IVb Catalogue

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 355 | IV IX A 1<br>Am |  |  |  |  |  | S |  355 |  356 |
| 356 | IV IX A 2<br>Am |  |  |  |  |  | S | | |
| 357 | IV IX A 3<br>Am |  |  |  |  |  | R |  357 |  358 |
| 358 | IV IX A 6<br>Deo |  |  |  |  |  | XR | | |
| 359 | IV X A 1<br>Tax |  |  |  |  |  | XR |  359 |  360 |
| 360 | IV X A 2<br>Am |  |  |  |  |  | VR | | |
| 361 | IV X A 3<br>Mac |  |  |  |  |  | XR | no image available<br>361 |  362 |
| 362 | IV X A 10<br>Am |  |  |  |  |  | R | | |
| 363 | IV X A 11<br>Am |  |  |  |  |  [1] | S |  363 | no image available<br>364 |
| 364 | IV X A 12<br>All, Vem |  |  |  |  |  | XR | | |
| 365 | IV X A87<br>Mat |  |  |  |  |  | XR | no image available<br>365 |  366 |
| 366 | IV X B 9<br>Am |  |  |  |  |  | XR | | |
| 366a | IV X C 602<br>BB |  |  |  |  |  | XR |  366a |  367 |
| 367 | IV XI A 2<br>Am |  |  |  |  |  | VR | | |

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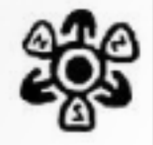
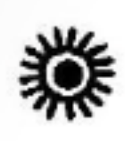
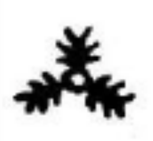
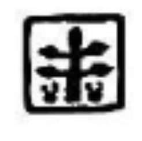
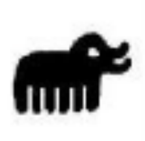
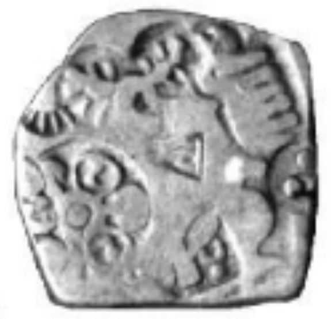
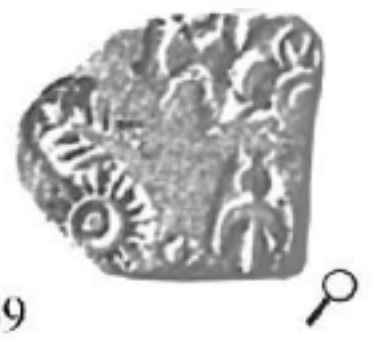
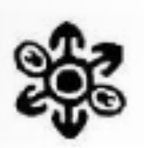
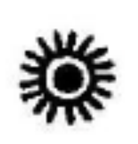
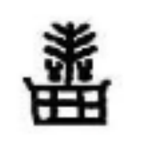
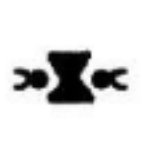
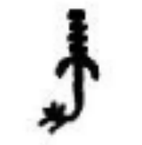
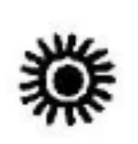
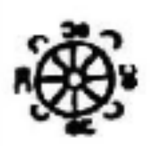
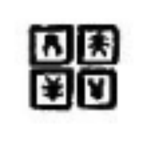
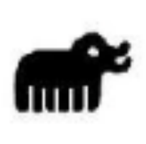
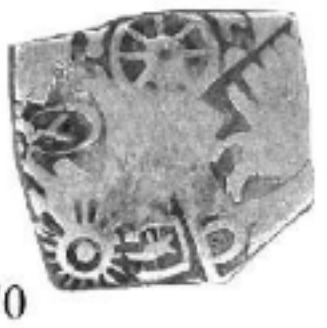
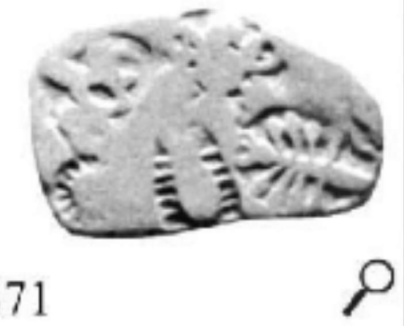
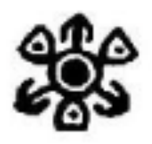
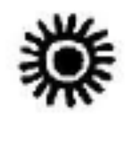
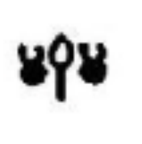
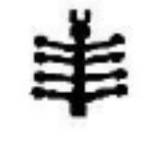
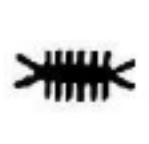
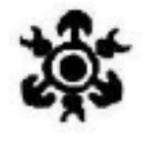
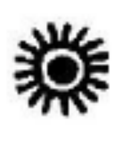
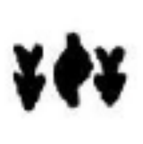
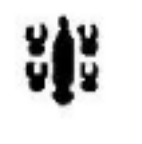
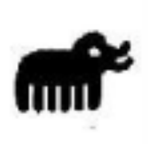
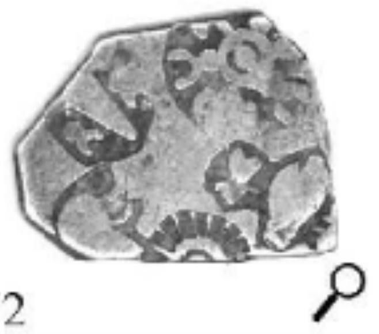
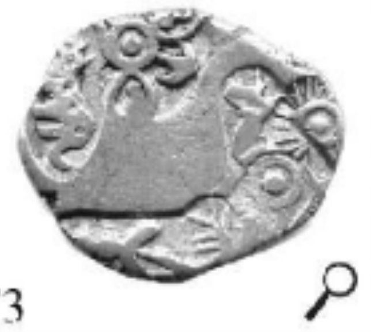
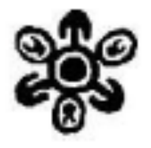
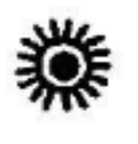
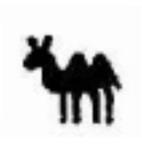
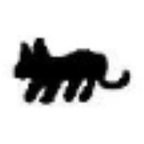
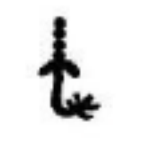
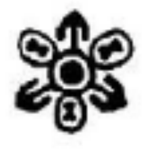
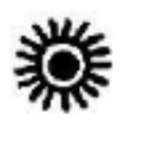
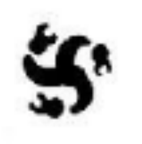
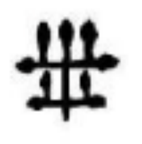
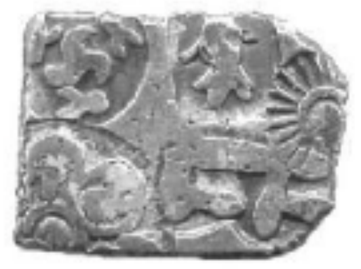
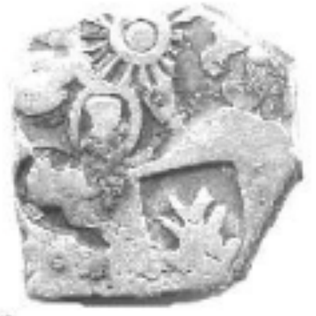
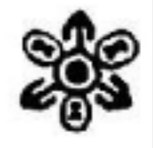
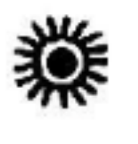
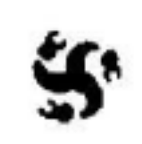
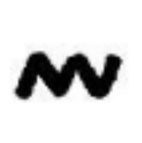
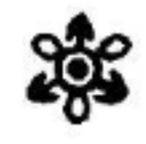
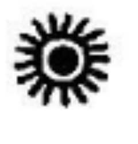
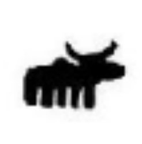
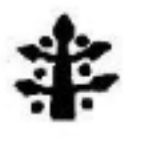
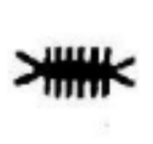
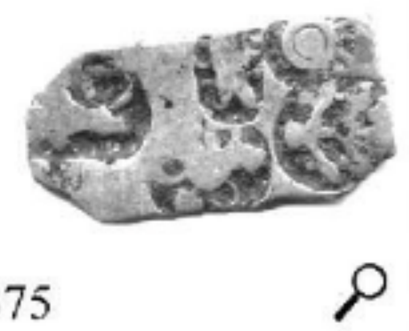
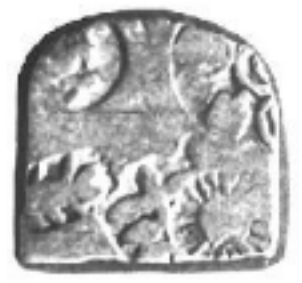
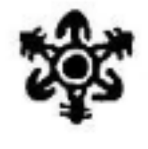
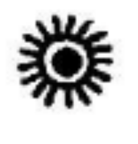
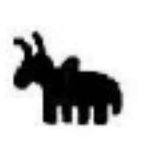
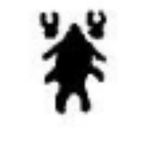
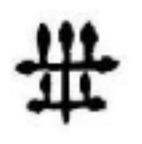
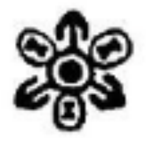
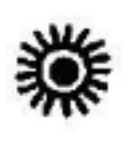
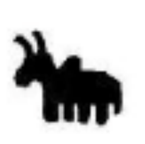
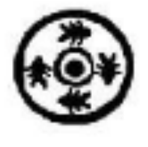
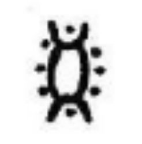
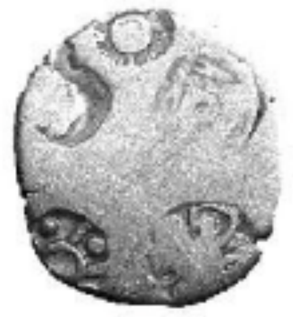
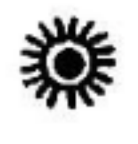
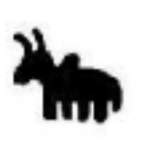
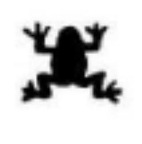
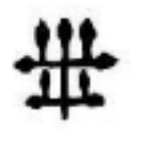
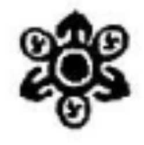
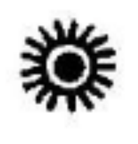
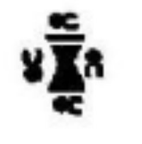
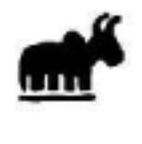
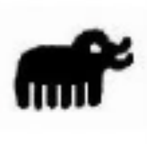
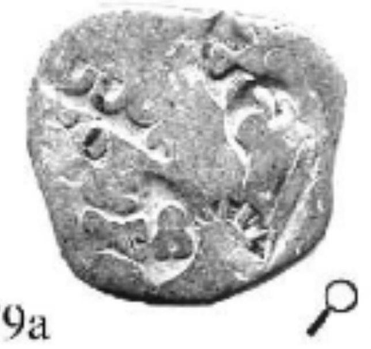
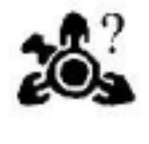
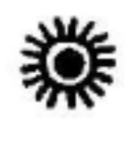
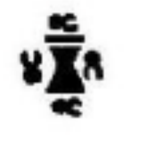
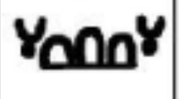
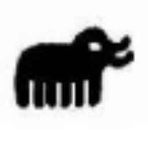
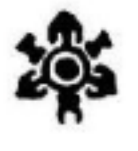
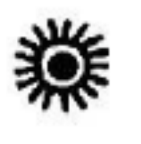
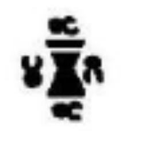
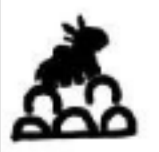
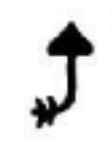
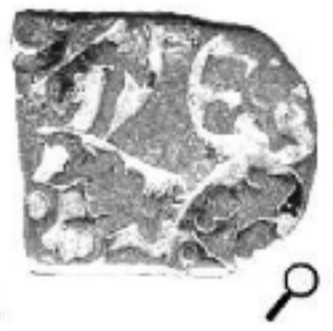
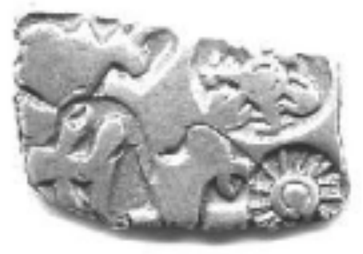
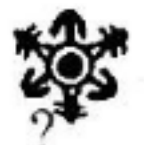
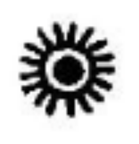
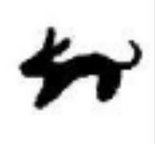
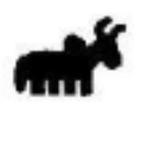
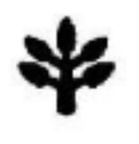
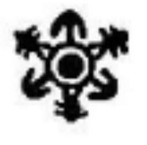
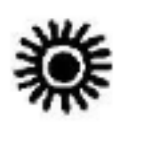
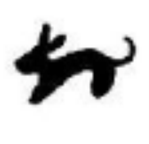
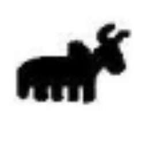
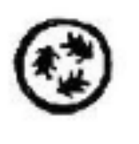
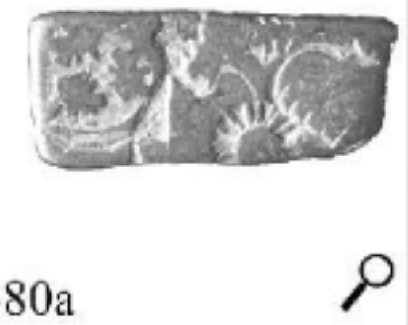
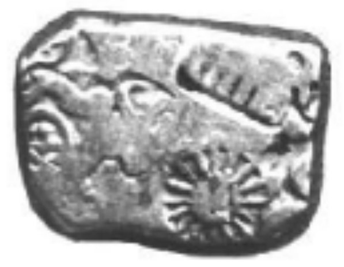
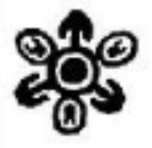
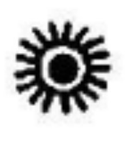
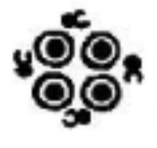
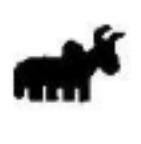
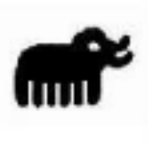
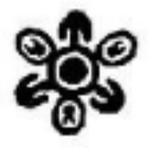
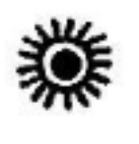
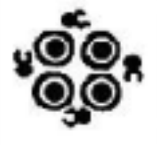
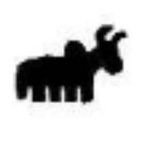
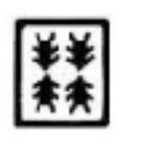
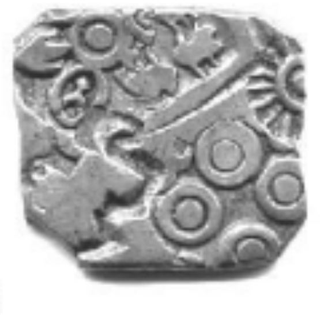
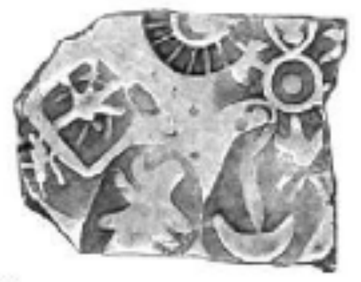
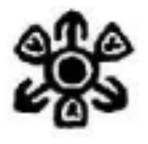
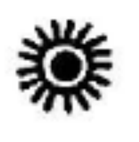
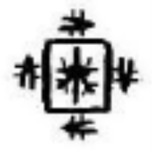
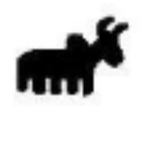
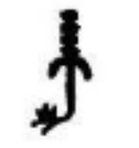
[1] There is doubt about mark 11. No complete example has been noted, thus marks 10 and 11 may be the same.

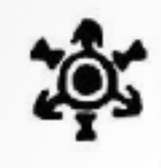
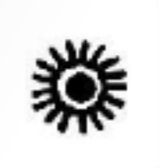
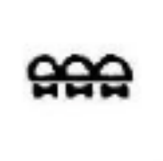
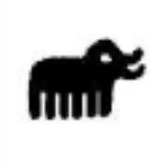
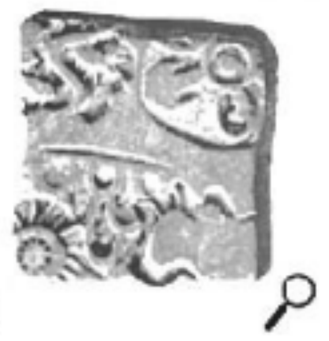
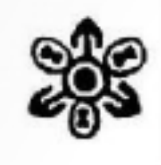
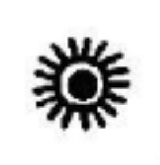
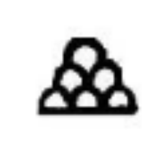
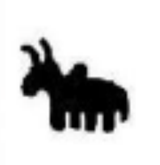
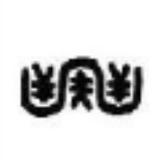
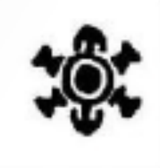
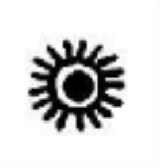
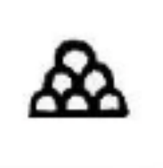
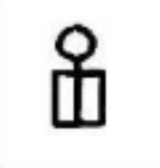
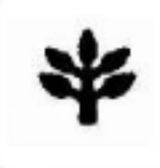
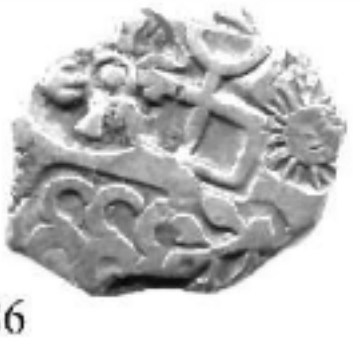
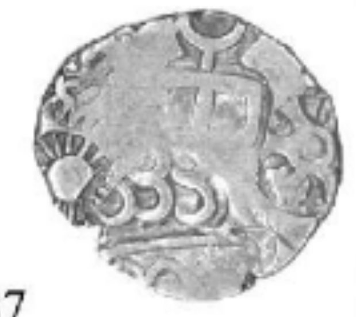
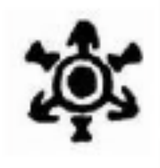
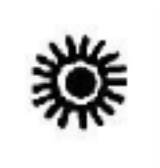
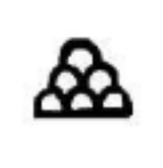
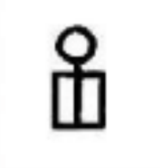
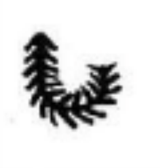
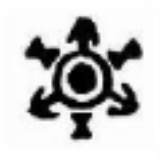
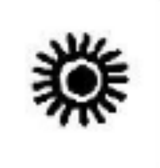
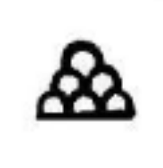
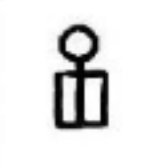
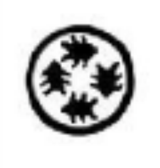
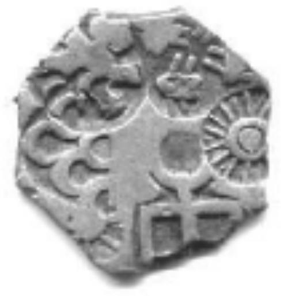
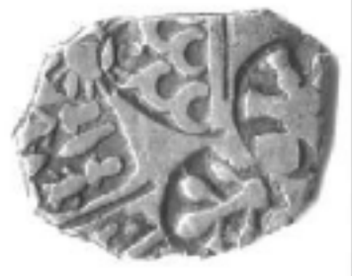
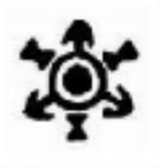
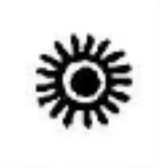
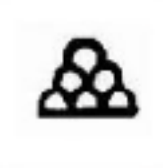
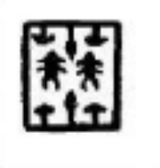
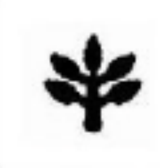
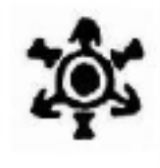
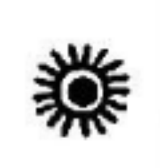
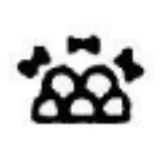
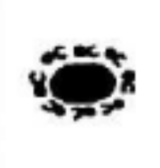
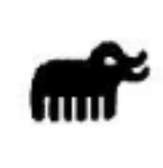
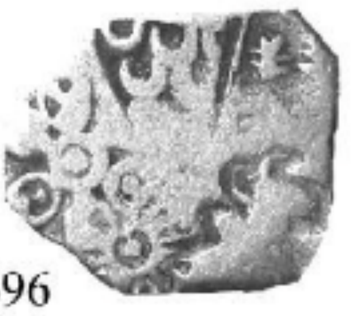
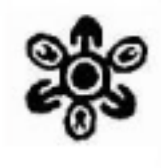
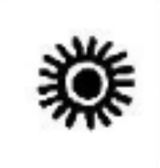
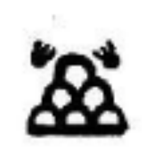
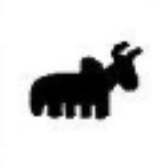
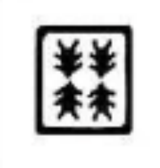
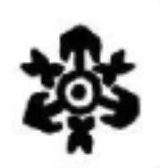
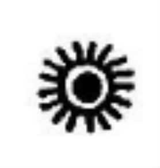
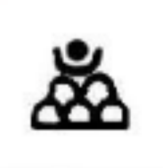
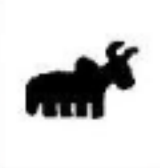
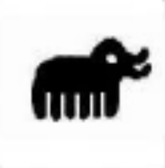
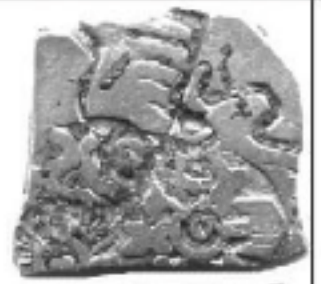
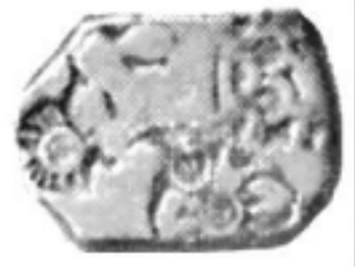
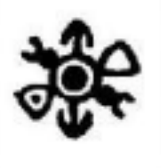
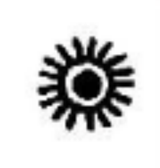
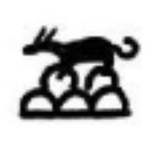
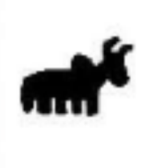
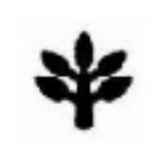
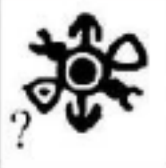
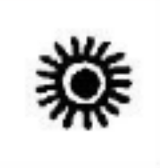
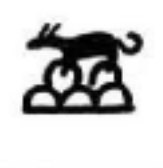
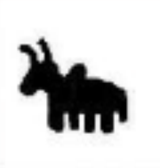
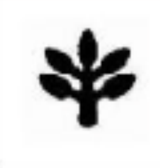
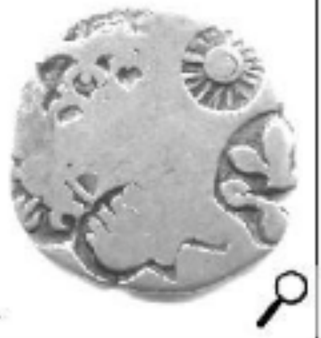
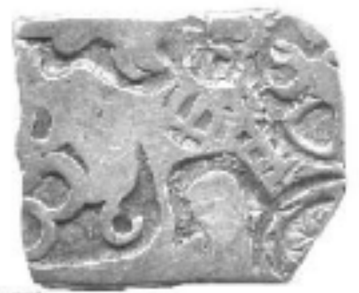
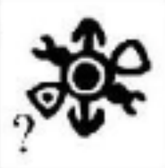
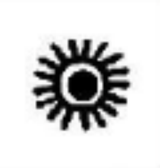
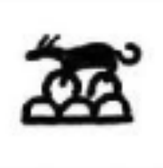
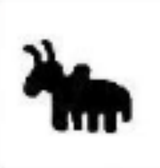
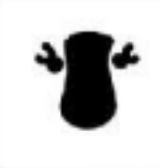
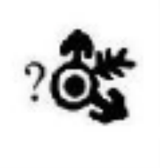
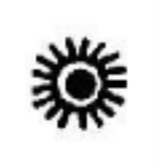
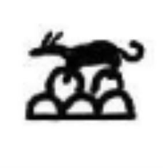
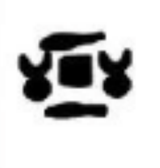
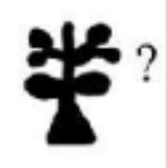
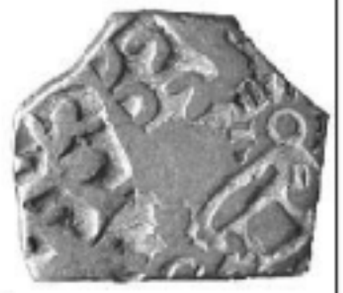
## SERIES IVb Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 368 | IV XII A 1<br>Mac |  |  |  |  |  | XR |  368 |  369 |
| 369 | IV XIII A 6<br>Am |  |  |  |  |  | XR | | |
| 370 | IV XIV A 1<br>Bh | ? |  |  |  |  | XR |  370 |  371 |
| 371 | IV XIV A 3<br>BM |  |  |  |  |  | VR | | |
| 372 | IV XVI A 1<br>Am |  |  |  |  |  | R |  372 |  373 |
| 373 | IV XVII A 10<br>A |  |  |  |  |  | XR | | |
| 374 | IV XVIII A 5<br>Am |  |  | |  |  | S |  374 |  374a |
| 374a | IV XVIII A 12<br>A |  |  | |  |  | XR | | |
| 375 | IV XIX A 3<br>A |  |  |  |  |  | VR |  375 |  376 |
| 376 | IV XX A 5<br>Am |  |  |  |  |  | VR | | |
| 377 | IV XX B 86<br>Bh, R5 |  |  |  |  |  | XR |  377 | no image available<br>378 |
| 378 | IV XX C 5<br>Bh | ? |  |  |  |  | XR | | |
| 379 | IV XXI A 1<br>Am |  |  |  |  |  | VR | no image available<br>379 |  379a |
| 379a | IV XXI B1<br>RT |  ? |  |  | ?  |  | XR | | |

## SERIES IVb Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 379b | IV XXI C 7<br>RT |  |  |  |  |  2 | XR |  379b |  380 |
| 380 | IV XXII A 9<br>Am |  ? |  |  |  |  | R | | |
| 380a | IV XXII B87<br>BB |  |  |  |  |  | XR |  380a |  381 |
| 381 | IV XXIII A 1<br>Am |  |  |  |  |  | XR | | |
| 382 | IV XXIII A 13<br>Am |  |  |  |  |  | R |  382 |  383 |
| 383 | IV XXIV A 6<br>Am |  |  |  |  |  | VR | | |

## SERIES IVc Catalogue

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 384 | IV XXV A 1<br>Pr |  |  |  | |  | XR | no image available<br>384 | <br>385 |
| 385 | IV XXVI A 88<br>Am |  |  |  |  |  | XR | | |
| 386 | IV XXVI B 9<br>Am |  |  |  |  |  | R | <br>386 | <br>387 |
| 387 | IV XXVI B 79<br>Am |  |  |  |  |  | VR | | |
| 388 | IV XXVI B 89<br>PLG |  |  |  |  |  | XR | <br>388 | <br>389 |
| 389 | IV XXVI C 9<br>A |  |  |  |  |  | XR | | |
| [1]<br>395 | IV XXVIII A 1<br>Lal |  |  |  |  |  | XR | no image available<br>395 | <br>396 |
| 396 | IV XXIX A 13<br>Bh |  |  |  |  |  | XR | | |
| 396a | IV XXIX B 1<br>A |  |  |  |  |  | XR | <br>396a | <br>397 |
| 397 | IV XXX A 9<br>Am |  |  |  |  |  | XR | | |
| 397a | IV XXX B 9<br>A | ?  |  |  |  |  | VR | <br>397a | <br>397b |
| 397b | IV XXX B 603<br>A | ?  |  |  |  |  | XR | | |
| 397c | IV XXX B 604<br>BB | ?  |  |  |  |  ? | XR | <br>397c | |
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[1] Types 390-394 transferred to Series IVb

## SERIES IVd Catalogue

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
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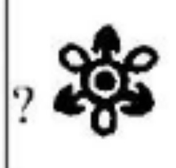
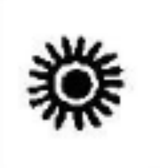
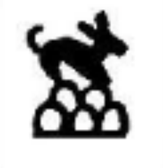
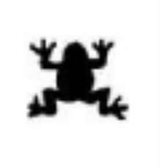
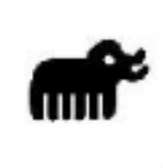
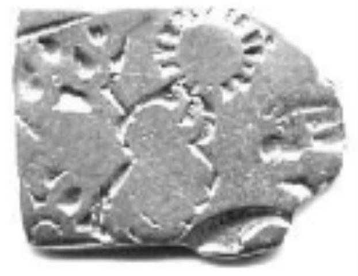
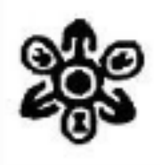
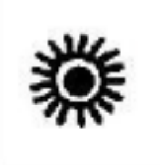
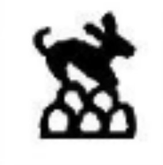
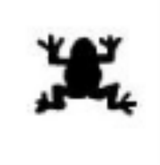
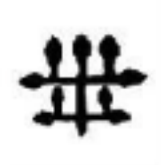
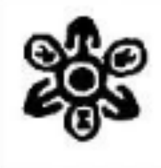
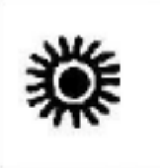
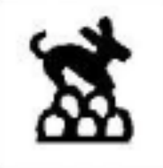
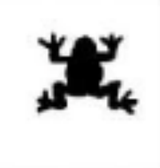
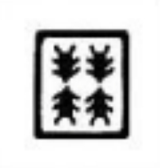
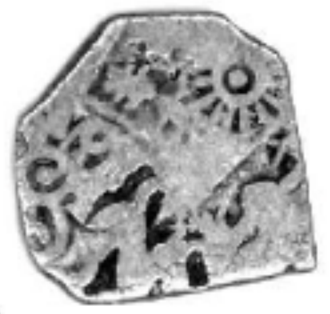
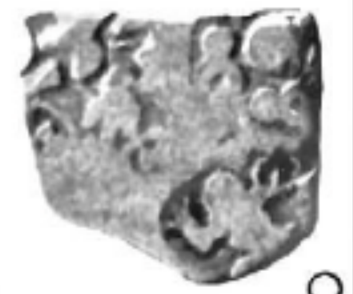
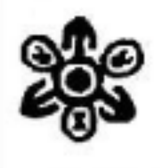
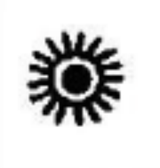
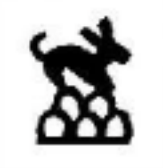
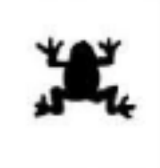
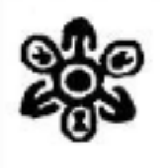
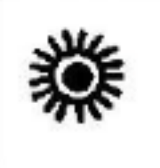
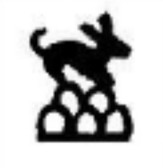
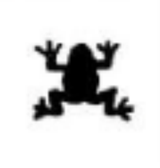
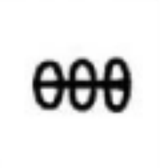
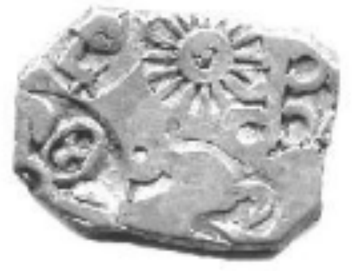
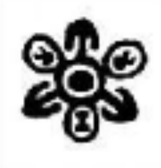
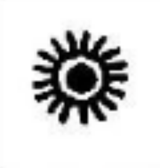
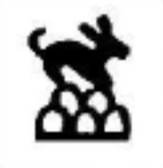
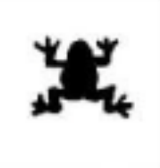
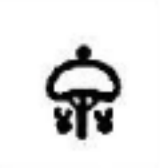
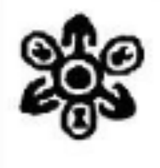
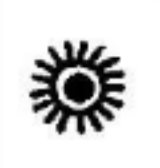
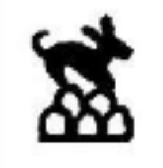
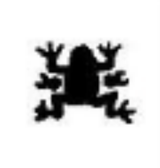
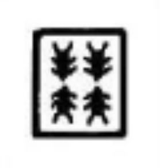
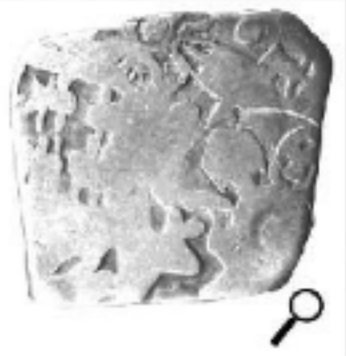
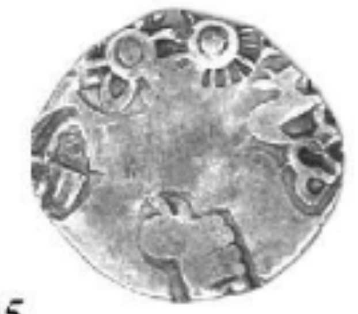
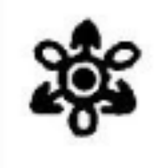
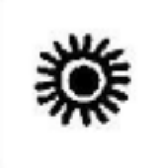
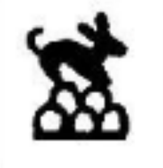
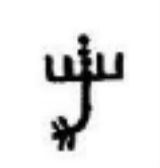
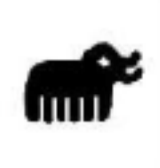
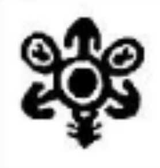
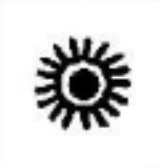
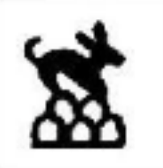
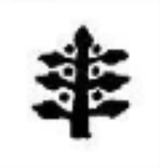
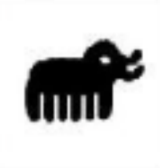
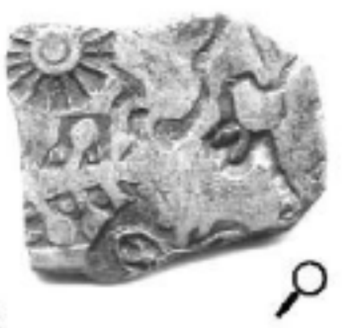
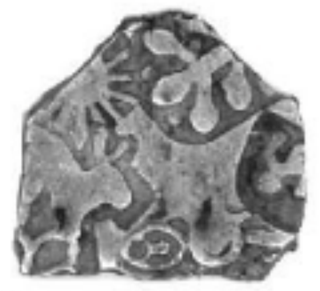
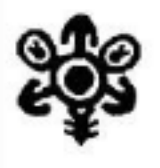
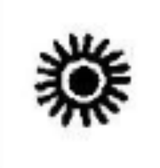
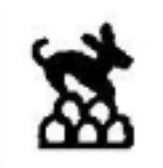
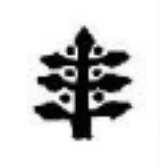
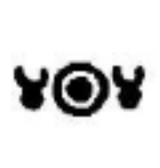
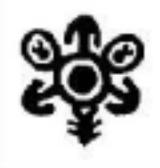
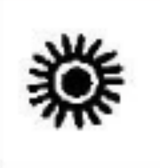
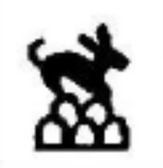
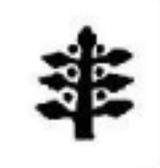
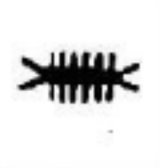
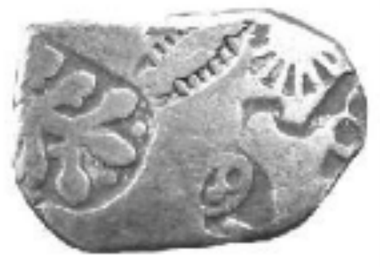
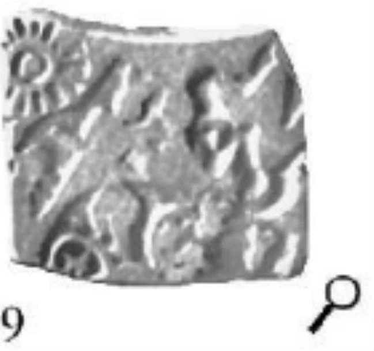
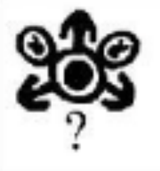
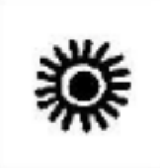
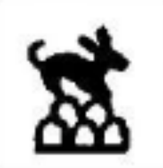
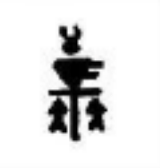
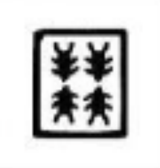
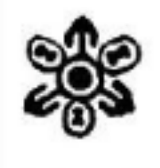
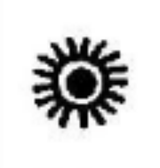
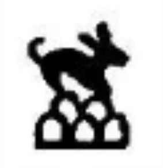
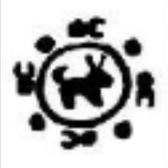
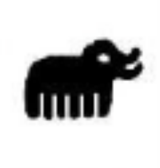
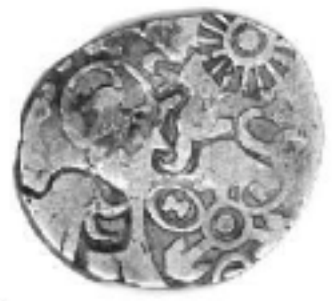
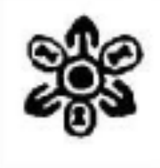
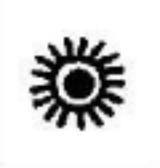
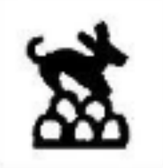
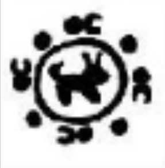
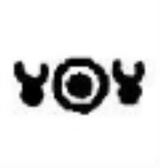
| 398 | IV XXXI A 1<br>Tax; Mal | ?  |  |  |  |  | VR | <br>398 | await Jha<br>399 |
| 399 | IV XXXI A 5<br>Am |  |  |  |  |  | XR | | |
| 400 | IV XXXI A 13<br>Am |  |  |  |  |  | N | <br>400 | <br>401 |
| 401 | IV XXXI A 14<br>Am |  |  |  |  | | S | | |
| 402 | IV XXXI A 15<br>Am |  |  |  |  |  | C | <br>402 | no image available<br>403 |
| 403 | IV XXXI A 90<br>Mal |  |  |  |  |  | XR | | |
| 404 | IV XXXI B 13<br>BM |  |  |  |  |  | R | <br>404 | <br>405 |
| 405 | IV XXXI C 1<br>Am |  |  |  |  |  | N | | |
| 406 | IV XXXI D 1<br>Am |  |  |  |  |  | S | <br>406 | <br>407 |
| 407 | IV XXXI D 2<br>Am |  |  |  |  |  | VR | | |
| 408 | IV XXXI D 3<br>Ch |  |  |  |  |  | XR | <br>408 | <br>409 |
| 409 | IV XXXI E 13<br>Am | <br>? |  |  |  |  | VR | | |
| 410 | IV XXXI F 1<br>Am |  |  |  |  |  | S | <br>410 | no image available<br>411 |
| 411 | IV XXXI F 2<br>May |  |  |  |  |  | XR | | |

## SERIES IVd Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
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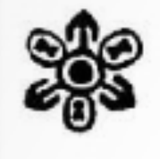
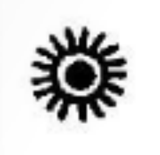
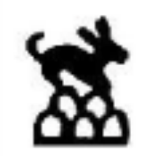
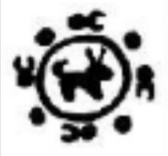
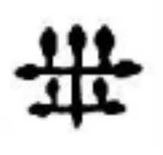
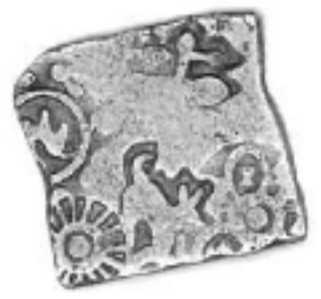
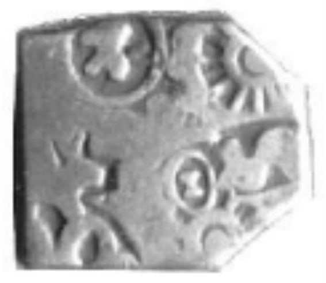
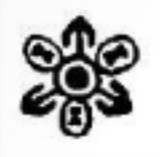
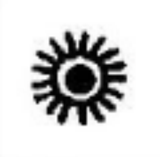
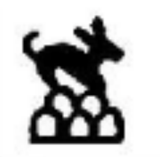
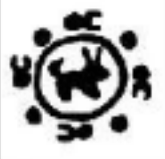
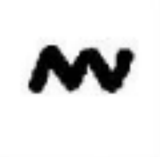
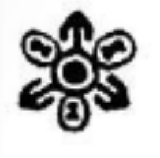
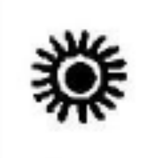
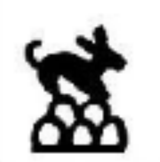
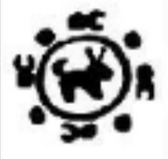
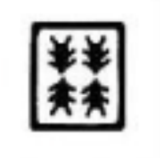
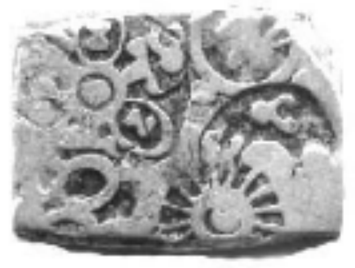
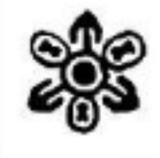
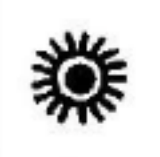
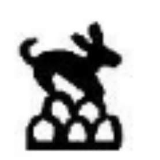
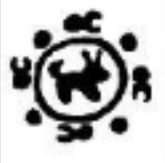
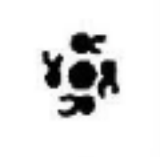
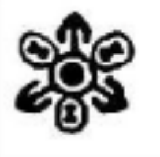
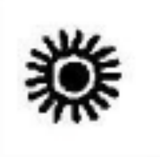
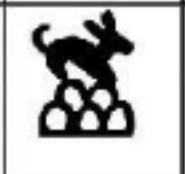
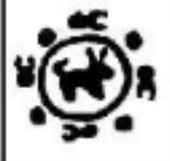
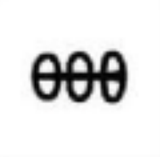
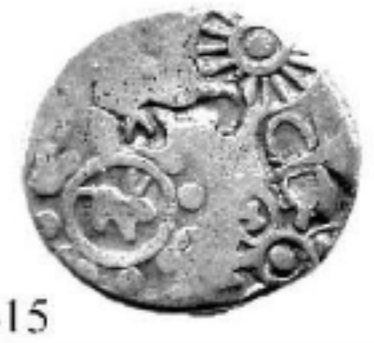
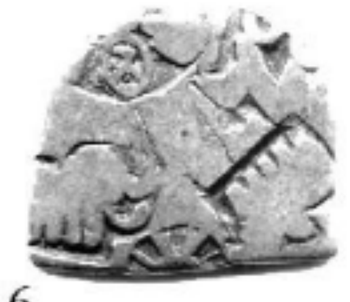
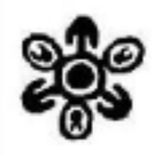
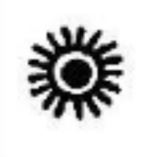
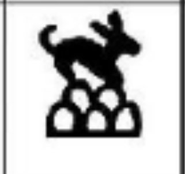
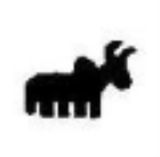
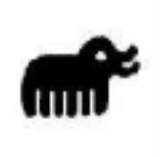
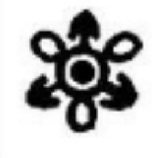
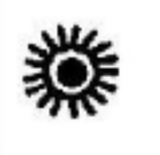
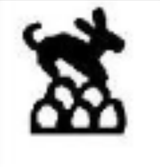
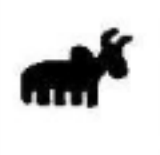
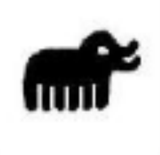
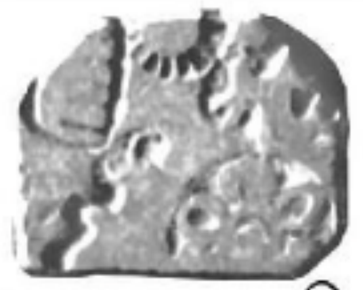
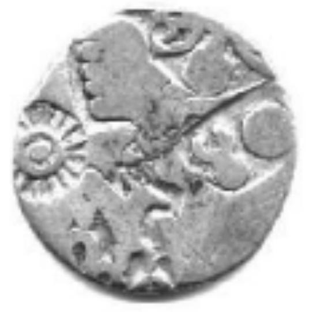
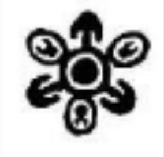
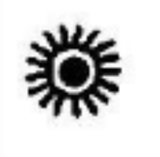
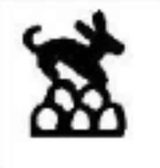
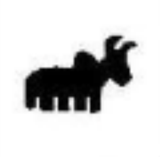
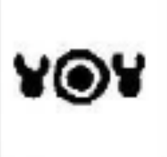
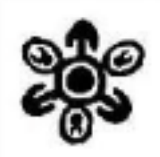
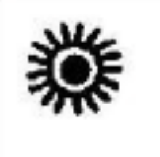
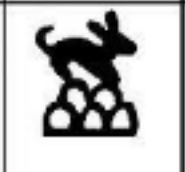
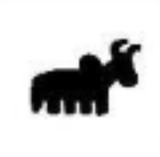
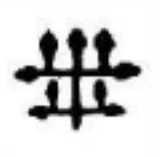
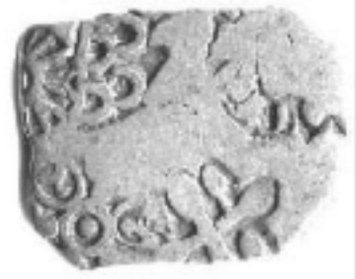
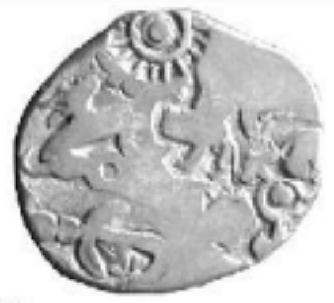
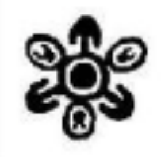
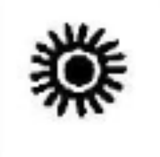
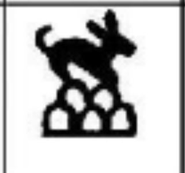
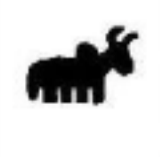
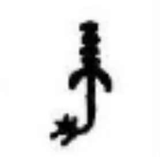
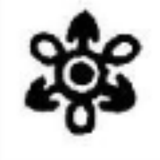
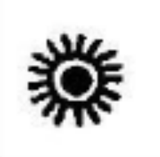
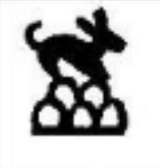
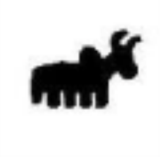
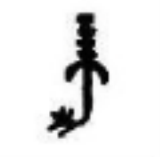
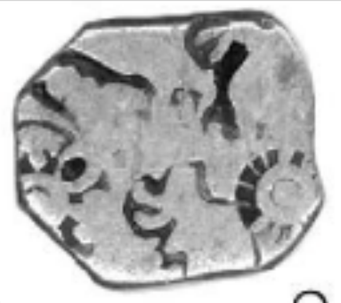
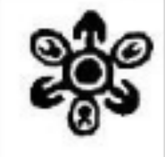
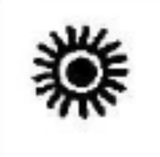
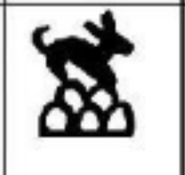
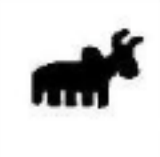
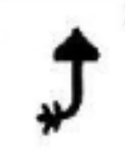
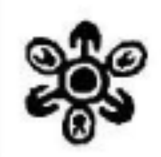
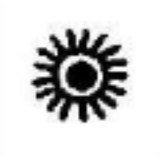
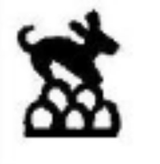
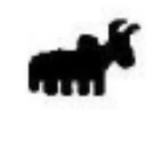
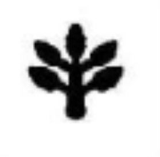
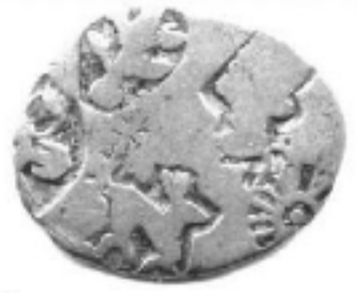
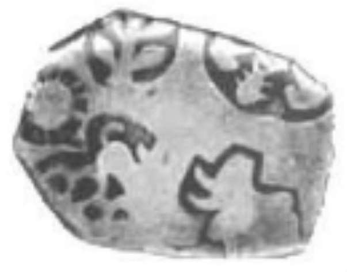
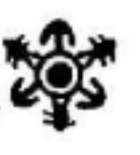
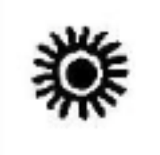
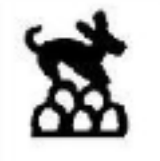
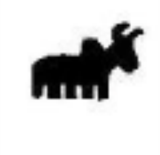
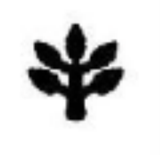
| 412 | IV XXXI F 5<br>Am |  |  |  |  |  | R |  412 |  412a |
| 412a | IV XXXI F 12<br>A |  |  |  |  |  | XR | | |
| 413 | IV XXXI F 13<br>Rai |  |  |  |  |  | XR | no image available<br>413 |  414 |
| 414 | IV XXXI F 14<br>Am |  |  |  |  |  | S | | |
| 415 | IV XXXI F 15<br>Am |  |  |  |  |  | N |  415 |  416 |
| 416 | IV XXXI G 1<br>Am |  |  |  |  |  | VC | | |
| 417 | IV XXXI G1*<br>Am |  |  |  |  |  | VR |  417 |  418 |
| 418 | IV XXXI G 2<br>Am |  |  |  |  |  | C | | |
| 419 | IV XXXI G 5<br>Am |  |  |  |  |  | VC |  419 |  420 |
| 420 | IV XXXI G 6<br>Bh |  |  |  |  |  | XR | | |
| [1]420a | IV XXXI G 6*<br>RT |  |  |  |  |  | XR |  420a | no image available<br>421 |
| 421 | IV XXXI G 7<br>Mal |  |  |  |  |  [2] | XR | | |
| 422 | IV XXXI G 9<br>Am |  |  |  |  |  | C |  422 |  422a |
| 422a | IV XXXI G 9*<br>RT | ?  |  |  |  |  | XR | | |

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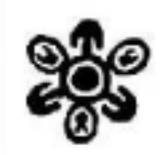
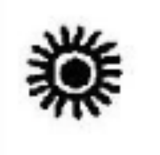
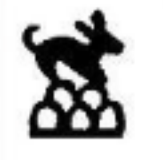
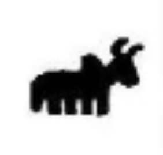
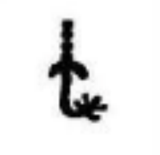
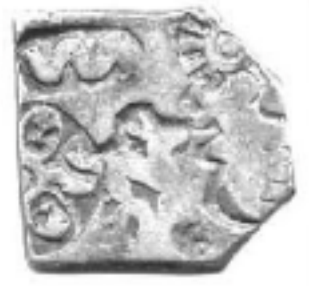
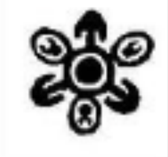
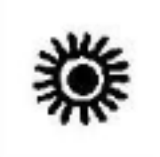
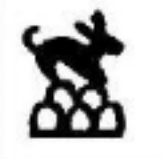
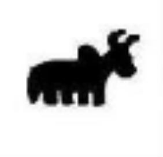
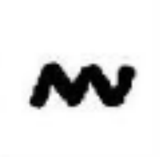
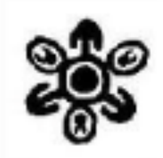
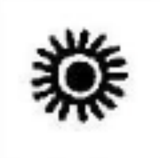
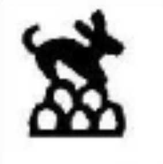
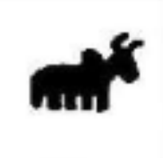
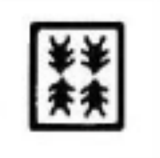
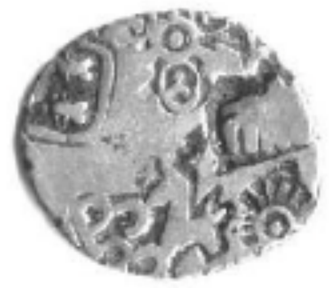
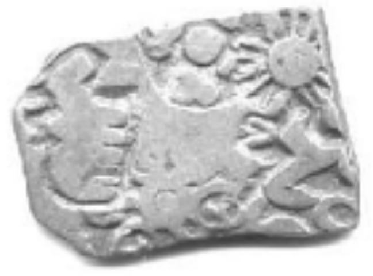
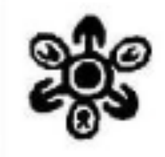
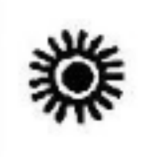
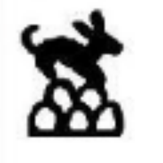
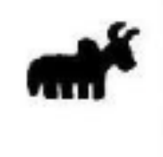
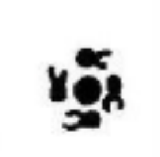
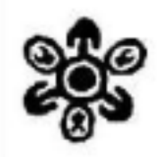
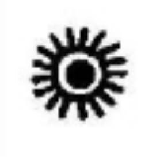
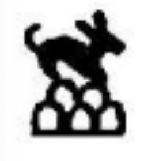
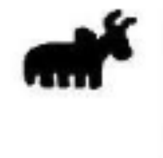
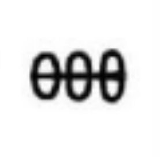
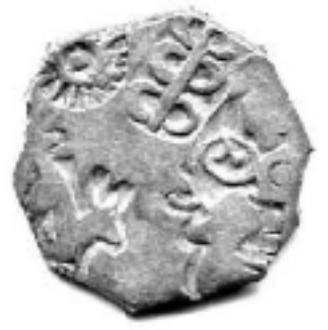
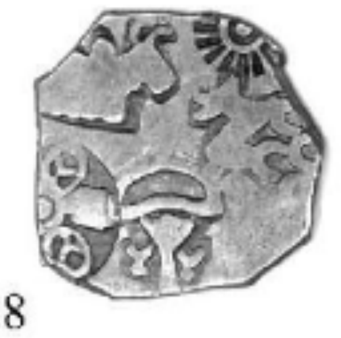
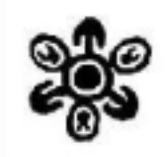
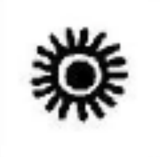
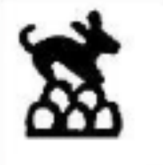
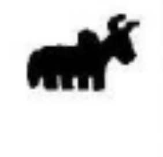
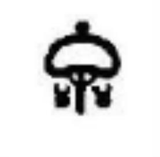
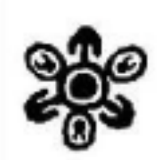
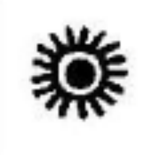
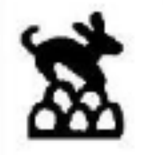
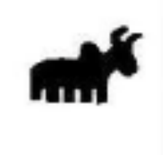
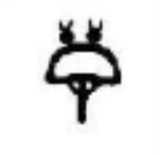
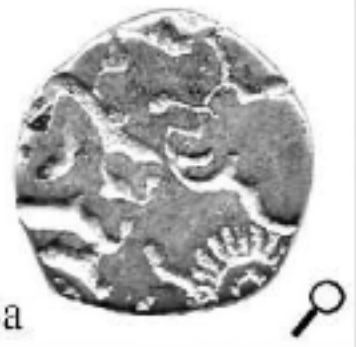
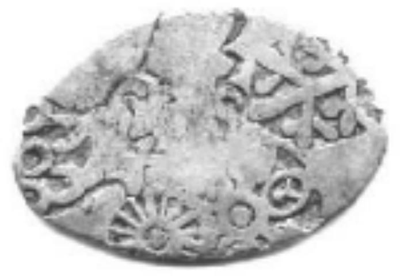
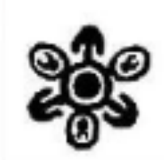
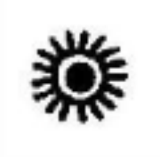
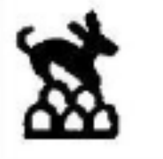
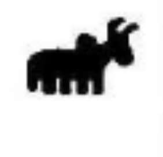
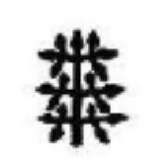
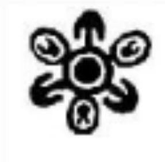
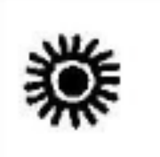
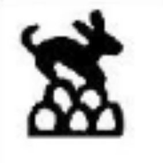
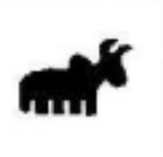
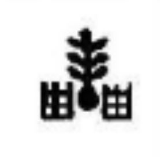
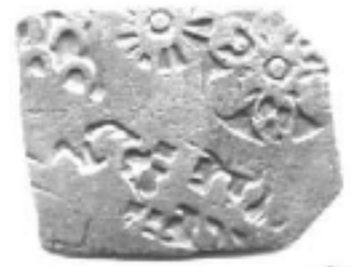
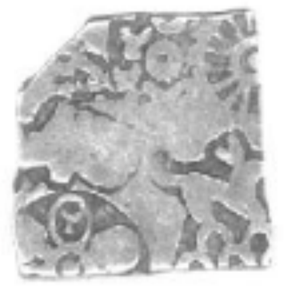
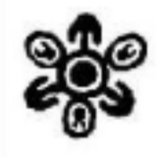
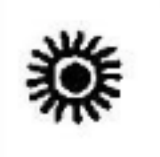
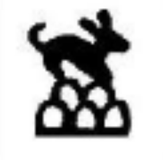
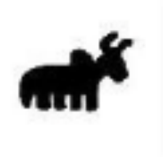
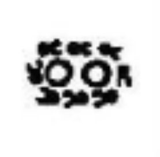
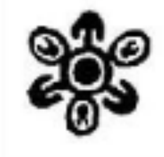
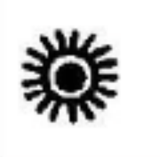
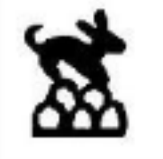
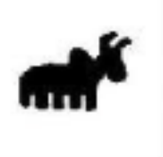
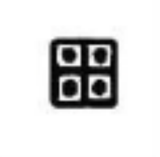
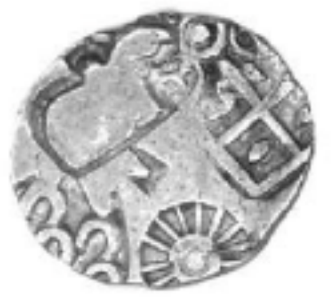
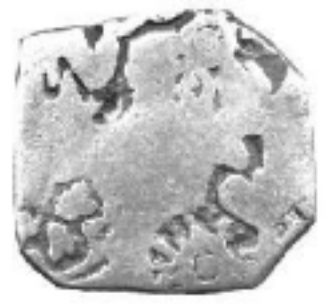
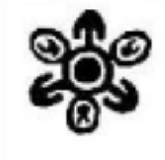
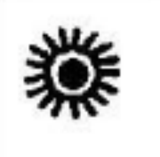
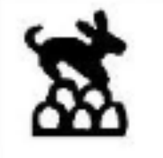
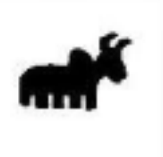
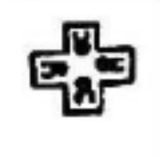
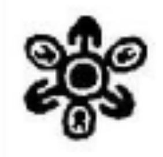
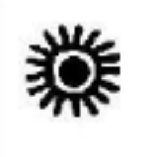
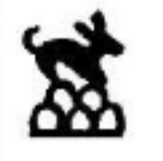
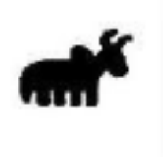
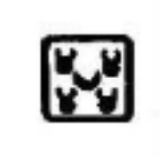
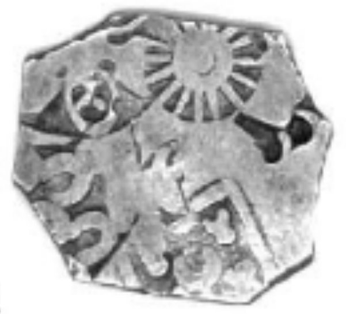
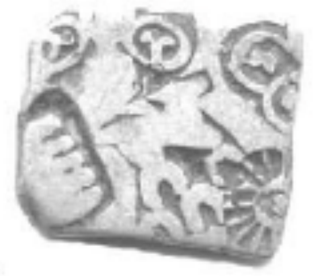
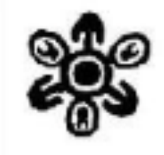
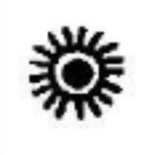
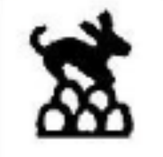
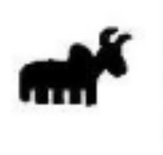
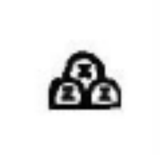
[1] Type 420a differs from 420 in the six-armed symbol not the fifth mark. [2] There is doubt about mark 7. No complete example has been noted, thus marks 6 and 7 may be the same.

## SERIES IVd Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 423 | IV XXXI G 10<br>Bah |  |  |  |  |  | XR | no image available<br>423 |  424 |
| 424 | IV XXXI G 12<br>Am |  |  |  |  |  | C | | |
| 425 | IV XXXI G 13<br>Am |  |  |  |  |  | VC |  425 |  426 |
| 426 | IV XXXI G 14<br>Am |  |  |  |  |  | C | | |
| 427 | IV XXXI G 15<br>Am |  |  |  |  |  | VC |  427 |  428 |
| 428 | IV XXXI G 90<br>Am |  |  |  |  |  | C | | |
| 428a | IV XXXI G 90a<br>A |  |  |  |  |  | VR |  428a |  429 |
| 429 | IV XXXI G 92<br>Am |  |  |  |  |  | R | | |
| 430 | IV XXXI G 93<br>Am |  |  |  |  |  | R |  430 |  431 |
| 431 | IV XXXI G 94<br>Am |  |  |  |  |  | R | | |
| 432 | IV XXXI G 95<br>Am |  |  |  |  |  | R |  432 |  433 |
| 433 | IV XXXI G 96<br>Am |  |  |  |  |  | S | | |
| 434 | IV XXXI G 97<br>Am |  |  |  |  |  | R |  434 |  435 |
| 435 | IV XXXI G 98<br>Am |  |  |  |  |  | VR | | |

## SERIES IVd Catalogue contd.

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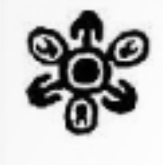
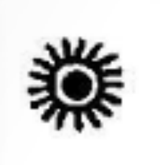
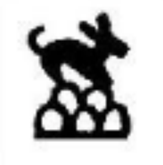
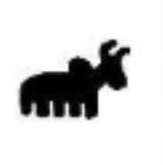
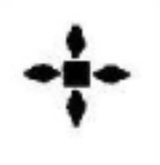
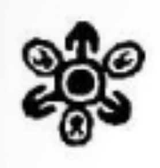
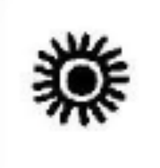
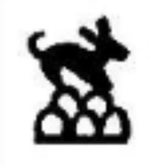
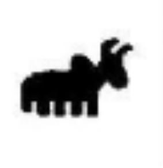
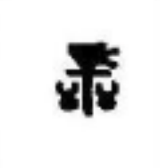
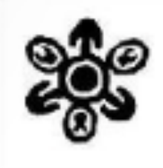
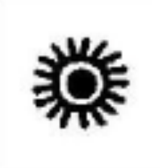
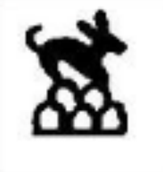
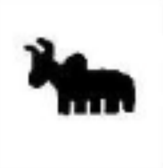
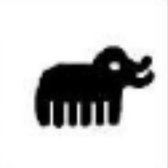
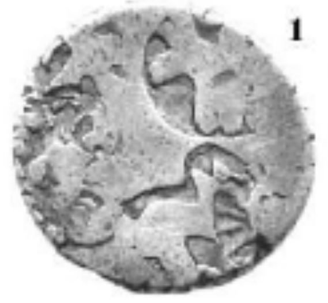
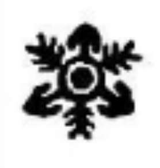
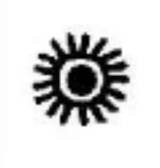
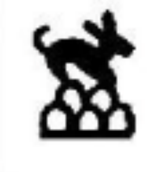
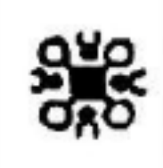
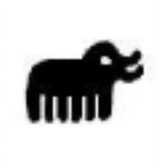
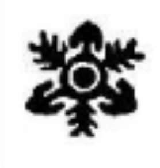
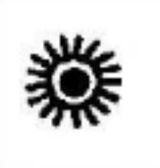
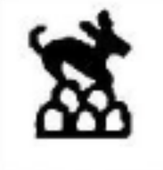
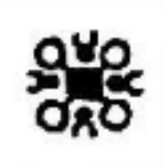
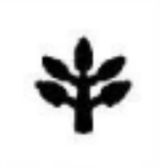
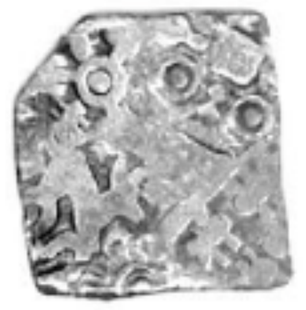
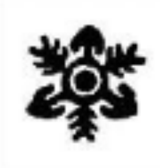
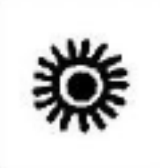
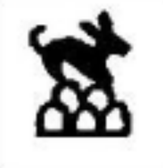
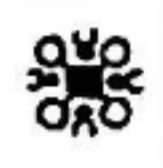
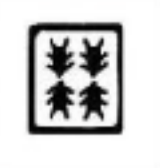
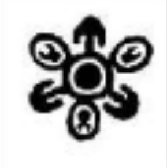
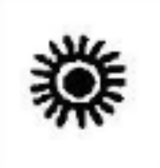
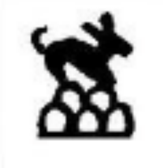
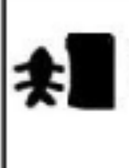
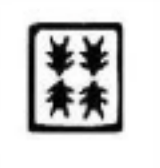
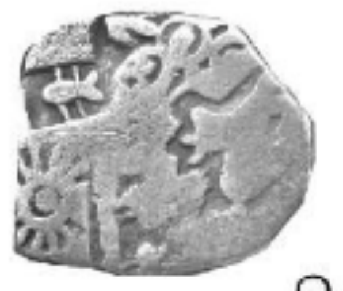
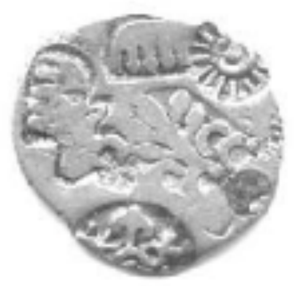
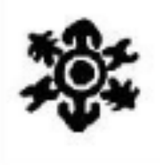
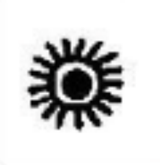
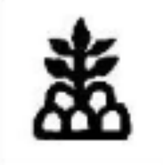
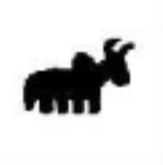
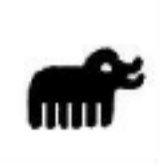
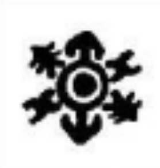
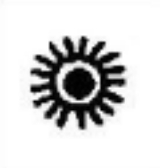
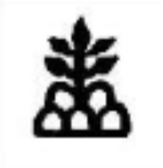
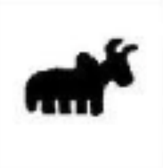
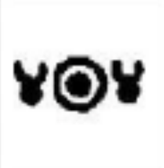
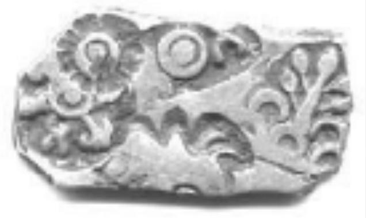
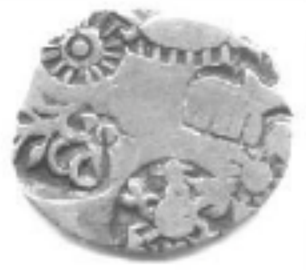
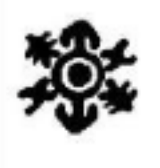
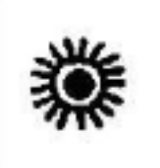
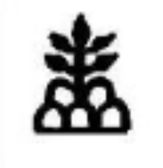
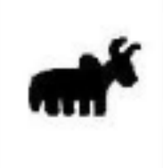
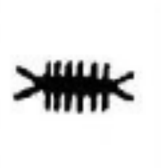
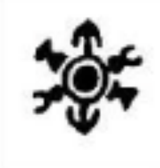
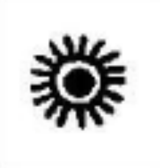
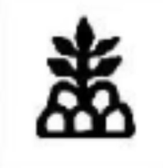
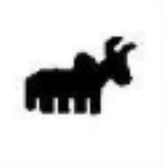
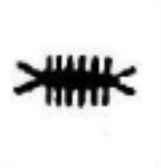
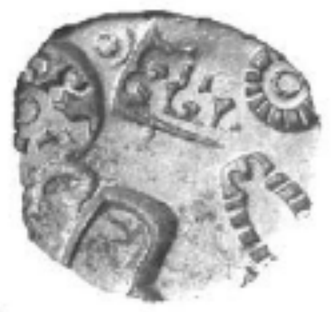
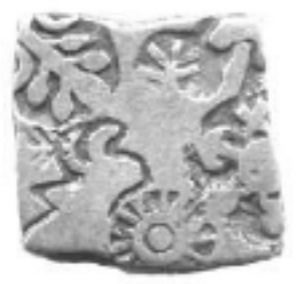
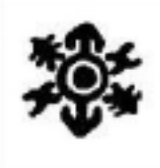
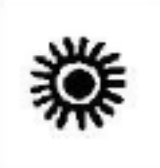
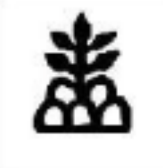
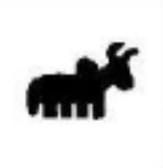
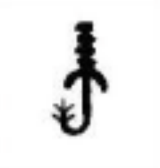
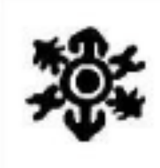
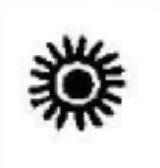
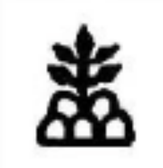
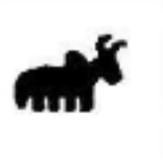
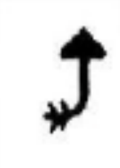
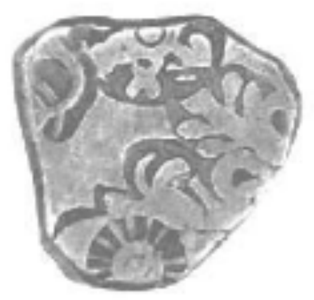
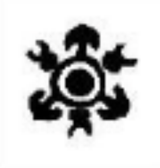
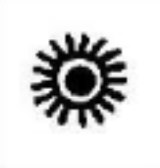
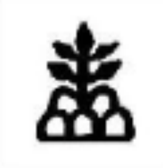
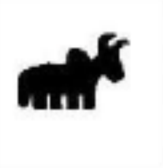
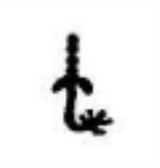
| 436 | IV XXXI G 99<br>Rai |  |  |  |  |  | XR | no image available<br>436 | no image available<br>437 |
| 437 | IV XXXI G<br>Tax 100 |  |  |  |  |  | XR | | |
| 438 | IV XXXI H 1<br>Am |  |  |  |  |  | VR |  [1]<br>438 | no image available<br>439 |
| 439 | IV XXXI J 1<br>Lal |  |  |  |  |  | XR | | |
| 440 | IV XXXI J 9<br>Mal |  |  |  |  |  | XR | no image available<br>440 | <br>441 |
| 441 | IV XXXI J 13<br>Bh |  |  |  |  |  | VR | | |
| 441a | IV XXXI K 13<br>A |  |  |  |  ? |  | XR | <br>441a | <br>442 |
| 442 | IV XXXII A 1<br>Am |  |  |  |  |  | XC | | |
| 443 | IV XXXII A 2<br>Am |  |  |  |  |  | C | <br>443 | <br>444 |
| 444 | IV XXXII A 3<br>Am |  |  |  |  |  | S | | |
| 444a | IV XXXII A 3<br>PT * |  |  |  |  |  | XR | <br>444a | <br>445 |
| 445 | IV XXXII A 6a<br>R5 |  |  |  |  |  | R | | |
| 446 | IV XXXII A 7<br>Am |  |  |  |  |  [2] | R | <br>446 | no image available<br>447 |
| 447 | IV XXXII A 10<br>Kar |  |  |  |  |  | XR | | |

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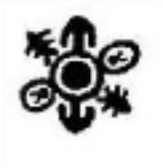
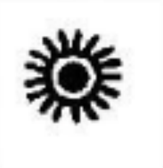
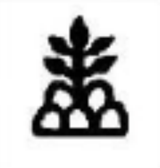
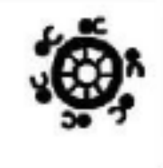
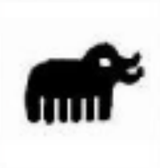
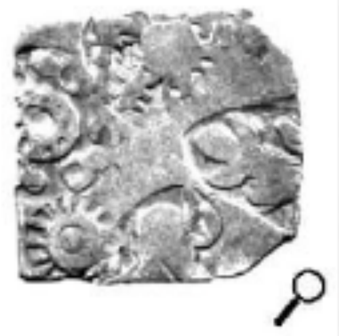
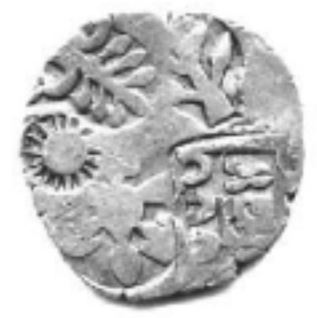
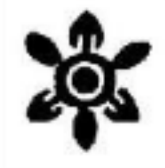
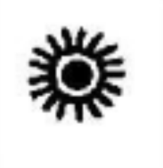
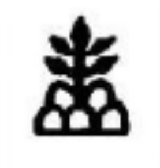
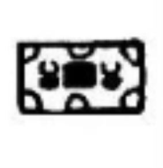
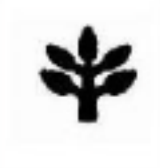
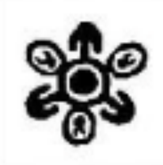
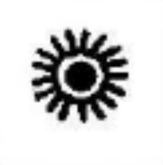
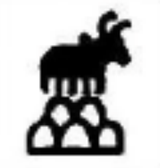
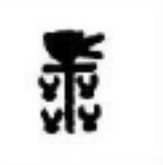
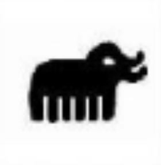
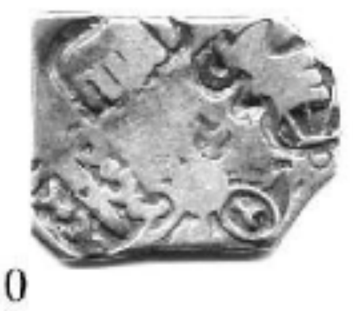
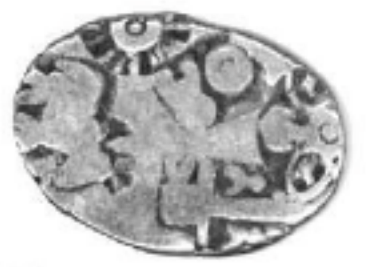
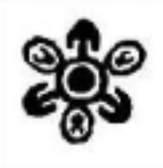
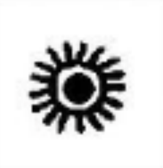
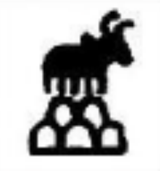
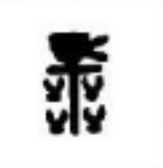
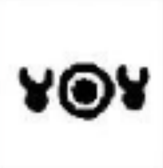
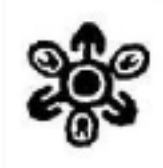
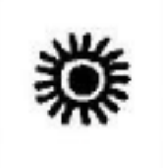
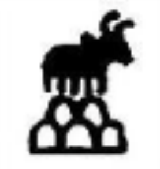
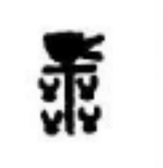
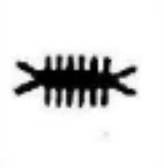
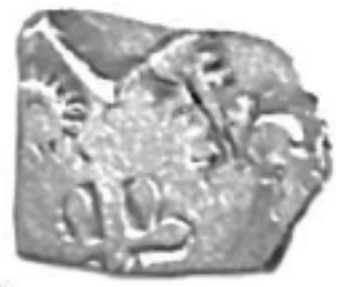
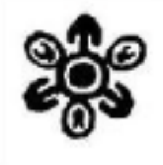
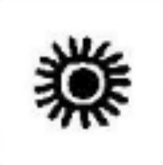
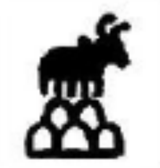
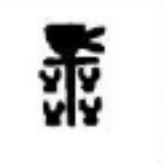
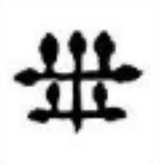
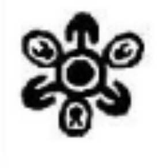
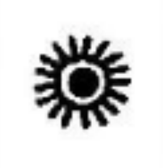
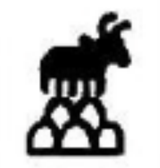
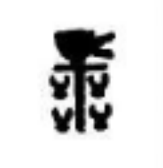
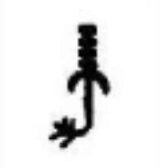
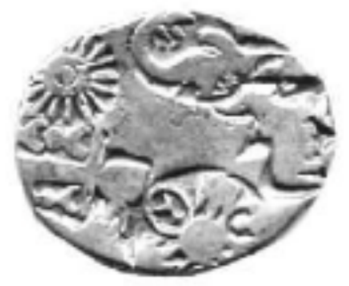
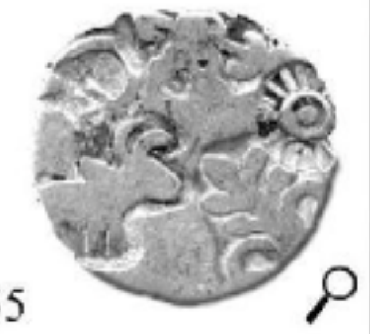
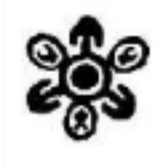
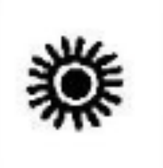
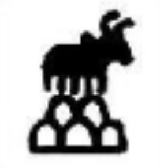
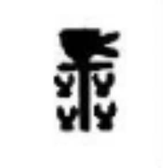
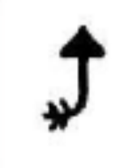
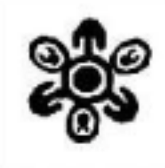
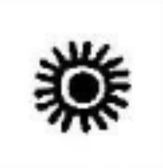
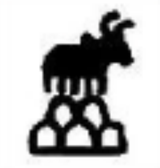
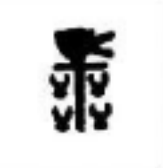
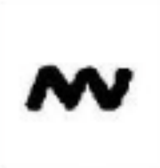
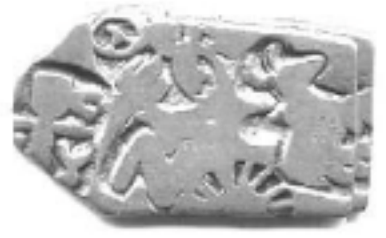
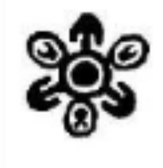
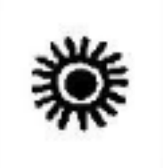
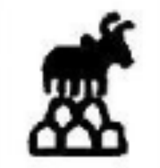
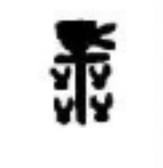
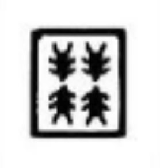
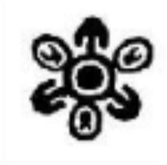
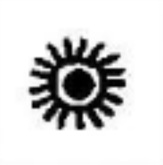
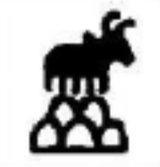
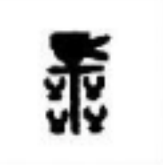
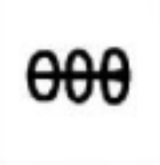
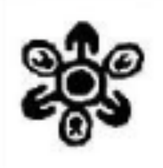
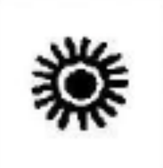
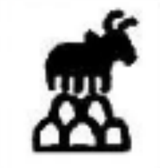
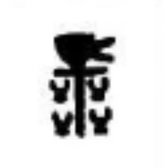
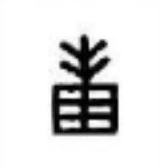
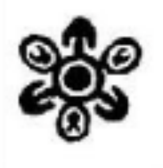
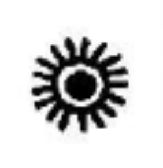
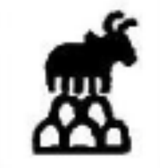
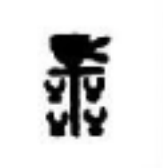
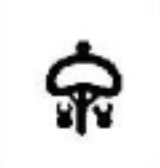
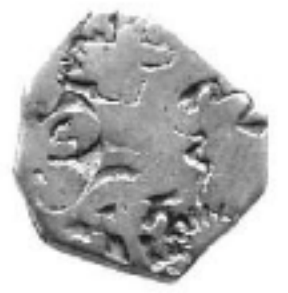
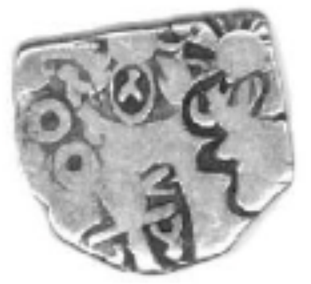
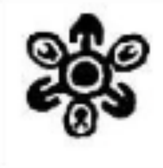
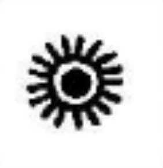
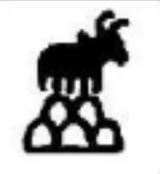
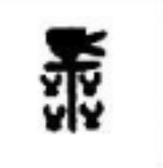
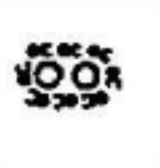
[1] The illustration shows IV XXXI H but with an uncertain fifth as on Unclear Coins U32. No image is available for Type 438 itself.

[2] There is doubt about Mark 7. No complete example has been noted, thus marks 6 and 7 may be the same.

## SERIES IVd Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 448 | IV XXXII B 1<br>Am |  |  |  |  |  | VR | <br>448 | <br>449 |
| 449 | IV XXXII C 9<br>A |  |  |  |  |  | XR | | |
| 450 | IV XXXIII A 1<br>Am |  |  |  |  |  | XC | <br>450 | <br>451 |
| 451 | IV XXXIII A 2<br>Am |  |  |  |  |  | N | | |
| 452 | IV XXXIII A 3<br>Ch |  |  |  |  |  | XR | no image available<br>452 | <br>453 |
| 453 | IV XXXIII A 5<br>Am |  |  |  |  |  | XR | | |
| 454 | IV XXXIII A 6<br>Am |  |  |  |  |  | S | <br>454 | <br>455 |
| 455 | IV XXXIII A 7<br>Gul |  |  |  |  |  [2] | XR | | |
| 456 | IV XXXIII A 12<br>Am |  |  |  |  |  | C | <br>456 | no image available<br>457 |
| 457 | [1] IV XXXIII A 13<br>Bah |  |  |  |  |  | XR | | |
| 458 | IV XXXIII A 15<br>Gul |  |  |  |  |  | XR | no image available<br>458 | no image available<br>459 |
| 459 | IV XXXIII A 17<br>May |  |  |  |  |  | XR | | |
| 460 | IV XXXIII A 90<br>Am |  |  |  |  |  | R | <br>460 | <br>461 |
| 461 | IV XXXIII A 94<br>Am |  |  |  |  |  | R | | |

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[1] This type is doubtful

[2] There is doubt about Mark 7. No complete example has been noted, thus marks 6 and 7 may be the same.

## SERIES IVd Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
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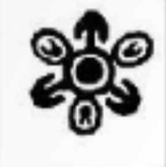
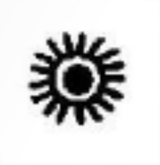
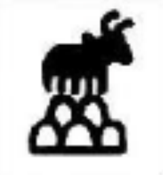
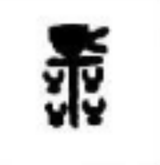
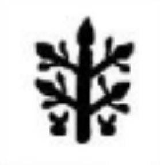
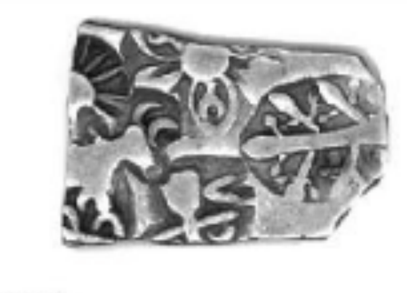
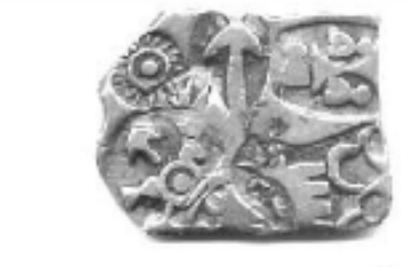
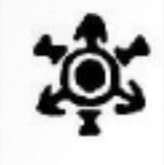
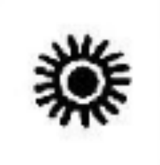
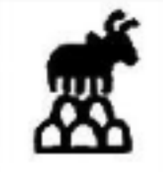
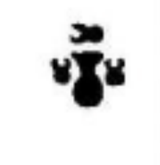
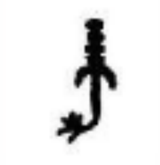
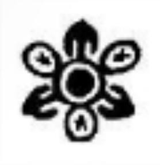
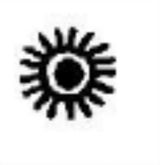
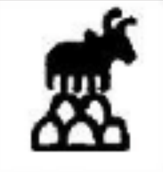
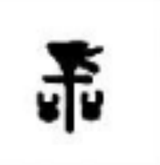
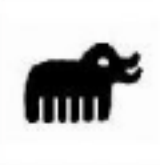
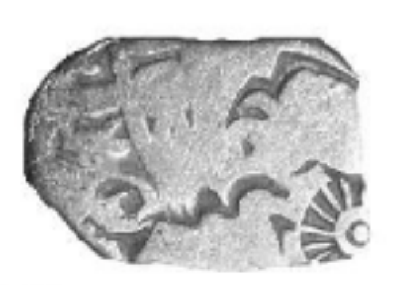
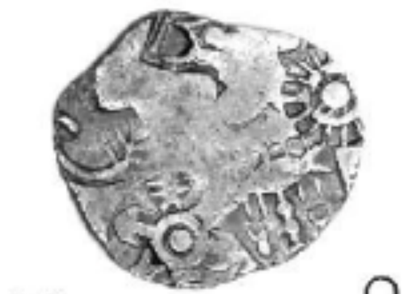
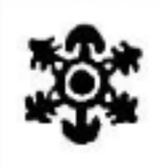
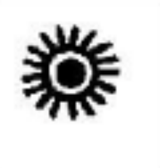
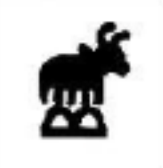
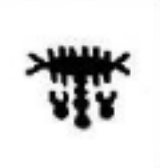
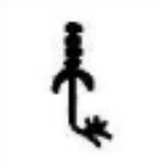
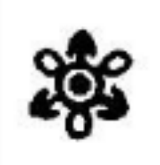
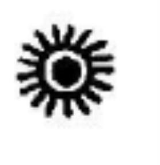
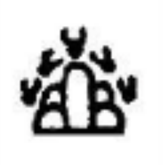
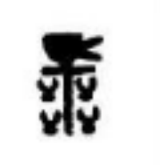
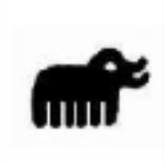
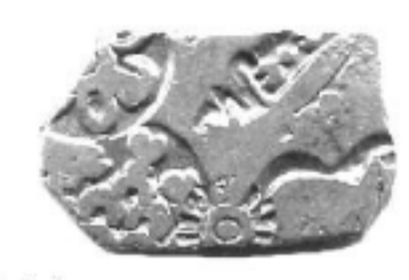
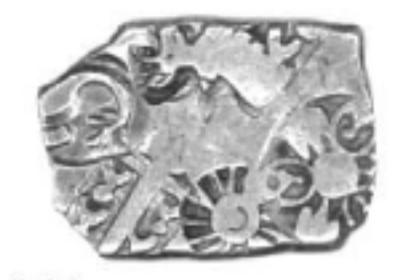
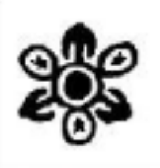
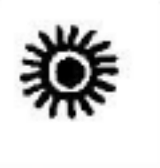
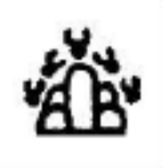
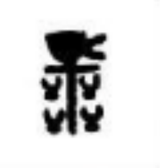
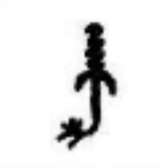
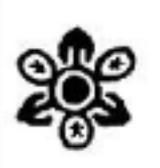
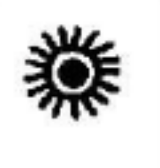
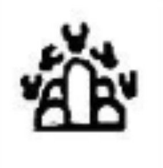
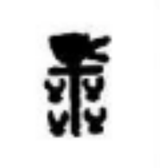
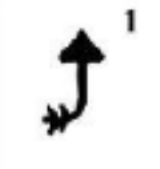
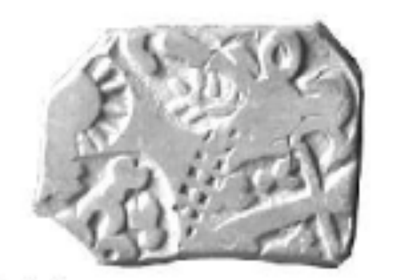
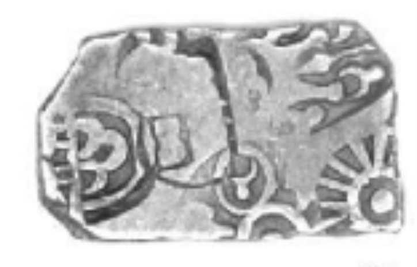
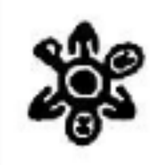
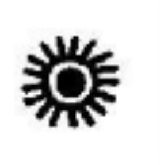
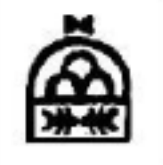
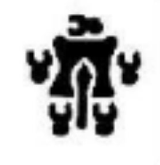
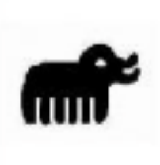
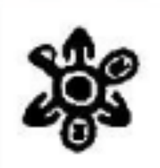
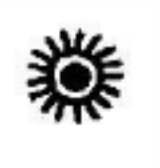
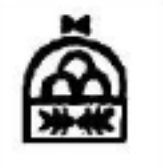
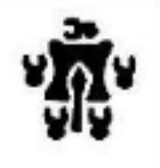
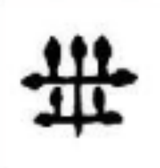
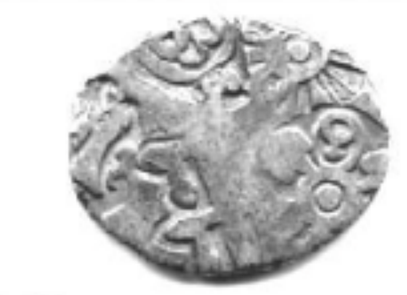
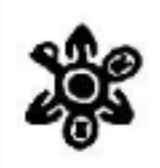
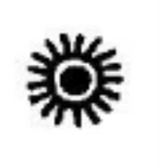
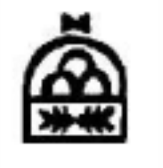
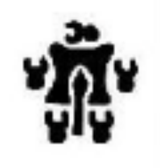
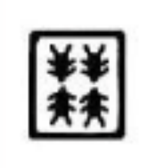
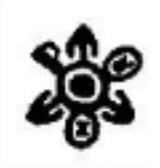
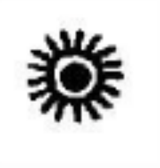
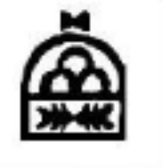
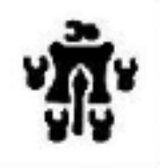
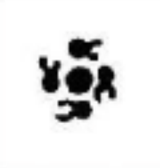
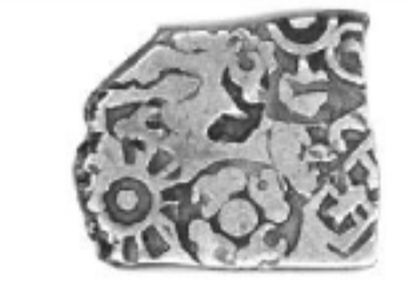
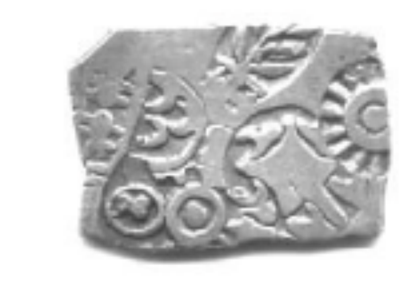
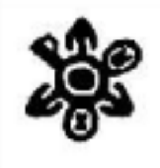
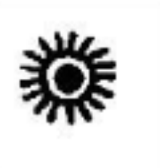
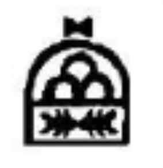
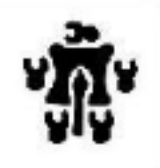
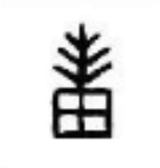
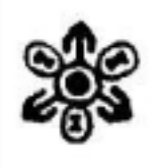
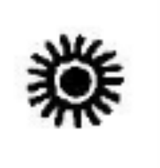
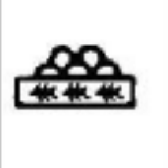
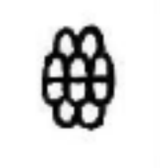
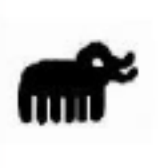
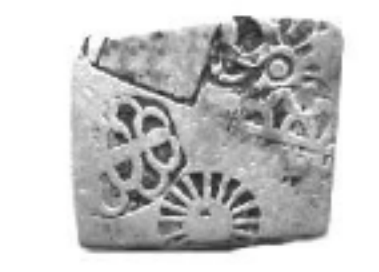
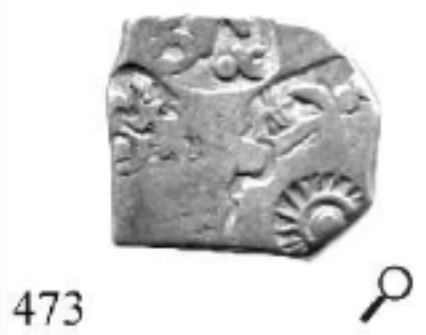
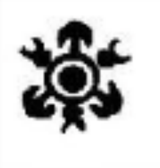
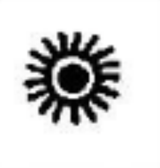
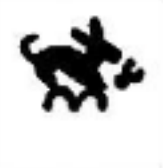
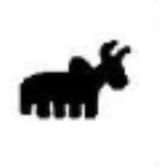
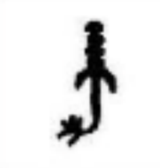
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 461a | IV XXXIII A<br>RT 532 |  |  |  |  |  | XR |  461a |  462 |
| 462 | IV XXXIII B 6<br>Bh |  |  |  |  |  | XR | | |
| 463 | IV XXXIII C 1<br>May |  |  |  |  |  | XR |  463 |  463a |
| 463a | IV XXXIII D 10<br>A |  |  |  |  |  | XR | | |
| 464 | IV XXXIV A 1<br>Am |  |  |  |  |  | C |  464 |  465 |
| 465 | IV XXXIV A 6<br>Am |  |  |  |  |  | R | | |
| 466 | IV XXXIV A 7<br>Bh |  |  |  |  |  [1] | XR |  466 |  467 |
| 467 | IV XXXV A 1<br>Am |  |  |  |  |  | N | | |
| 468 | IV XXXV A 5<br>Am |  |  |  |  |  | VC |  468 | no image available<br>469 |
| 469 | IV XXXV A 13<br>May |  |  |  |  |  | XR | | |
| 470 | IV XXXV A 14<br>Am |  |  |  |  |  | S |  470 |  471 |
| 471 | IV XXXV A 16<br>Am |  |  |  |  |  | VC | | |
| 472 | IV XXXVI A 1<br>Am |  |  |  |  |  | VR |  472 |  473 |
| 473 | IV XXXVII A 6<br>Am |  |  |  |  |  | VR | | |

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[1] There is doubt about Mark 7. No complete example has been noted, thus marks 6 and 7 may be the same.

## SERIES IVd Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
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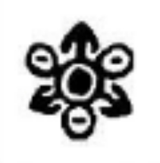
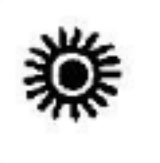
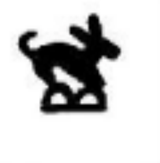
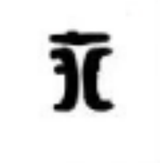
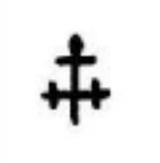
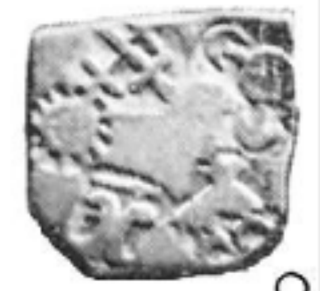
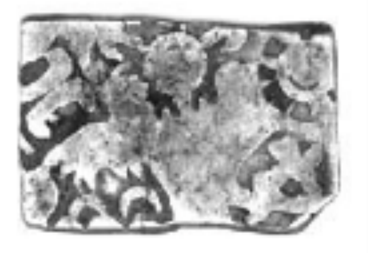
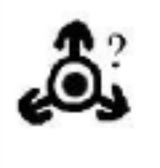
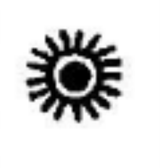
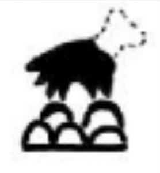
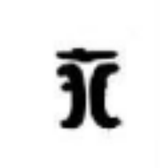
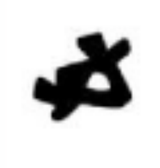
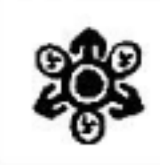
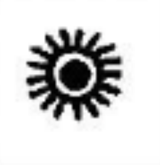
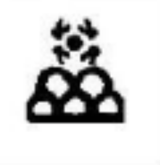
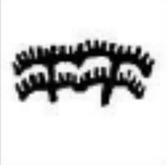
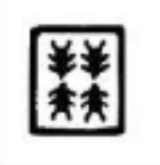
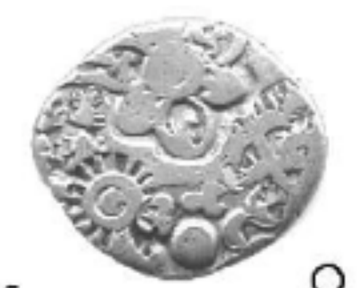
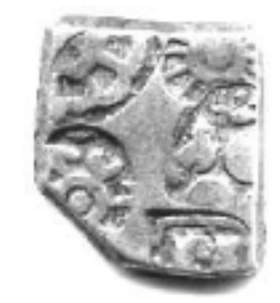
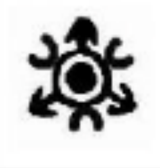
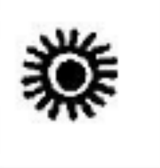
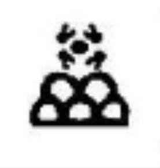
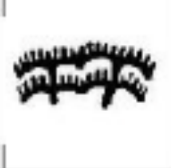
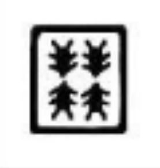
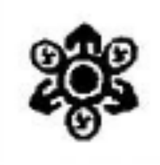
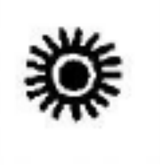
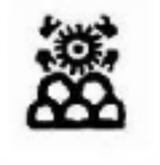
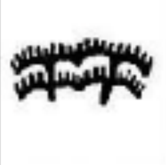
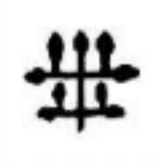
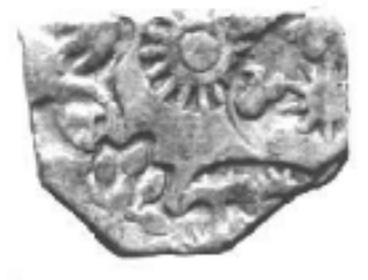
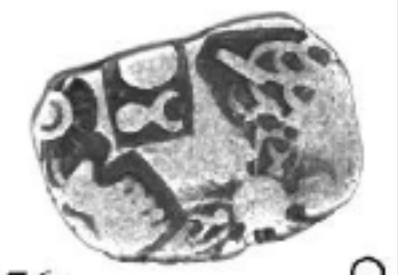
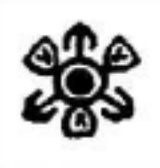
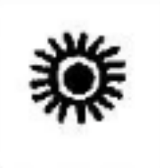
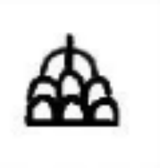
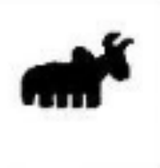
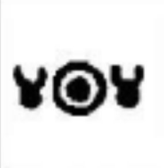
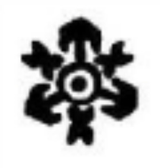
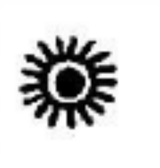
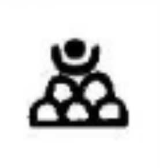
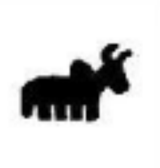
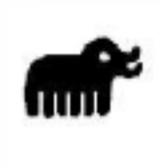
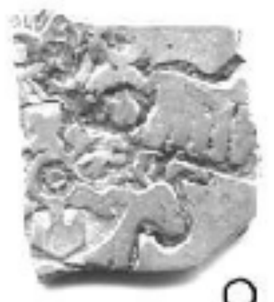
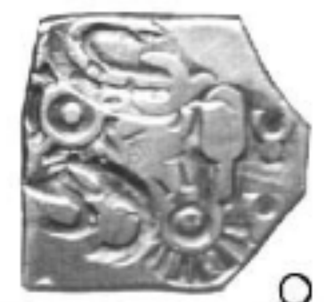
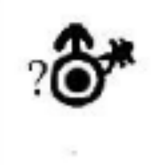
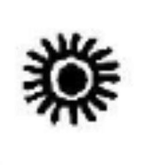
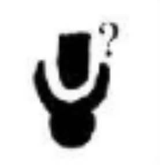
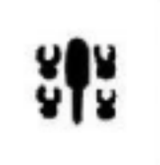
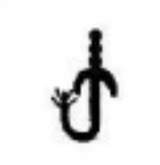
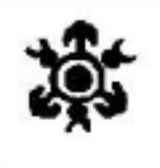
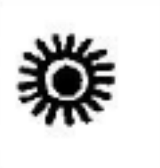
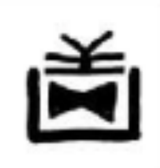
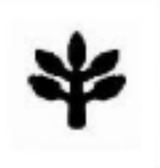
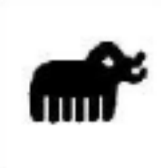
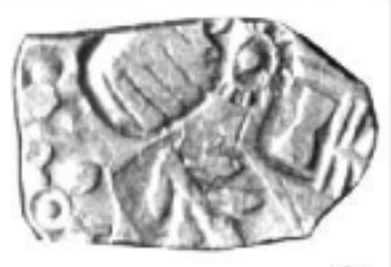
| 474 | IV XXXVIII A<br>Am 251 |  |  |  |  |  | XR |  474 |  474a |
| 474a | IV XXXIX A<br>RT 609 |  ? |  |  |  |  | XR | | |
| 475 | IV XXXIX A 13<br>Am |  |  |  |  |  | N |  475 |  475a |
| 475a | IV XXXIX A 13<br>A * |  |  |  |  |  | XR | | |
| 476 | IV XL A 5<br>Pr |  |  |  |  |  | XR |  476 |  476a |
| 476a | IV XLI A 2<br>RT |  |  |  |  |  | XR | | |
| 476b | I XLII A 1<br>A |  |  |  |  |  | XR |  476b |  476c |
| 476c | I XLIII A 6a<br>M 3417 | ?  |  |  ? |  |  | XR | | |
| 476d | I XLIV A 1<br>M 3419 |  |  |  |  |  | XR |  476d | |
| | | | | | | | | | |

# Series V

This Series comprises coins of small size nearly always without arches or arches-and-crescent as class mark. The silver in some classes seems slightly debased and the bankers marks become fewer on the reverse and virtually disappear from the obverse. One interesting characteristic of this Series is the complexity of varieties introduced into the six-armed symbol, usually in the three devices between the arrows, which become filled with increasingly microscopic geometrical and even animal forms. This is in stark contrast to the coins of Series VI, which revert to the old favourite of alternating arrows and taurines. There will have been a reason for this change which hints that the mint perceived it was running out of workable options for variation within the rules it had established.

The series is subdivided into two subseries:

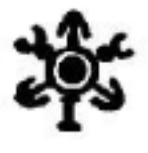
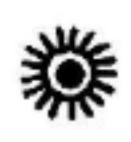
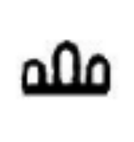
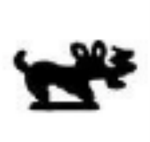
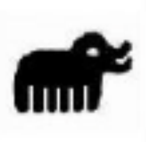
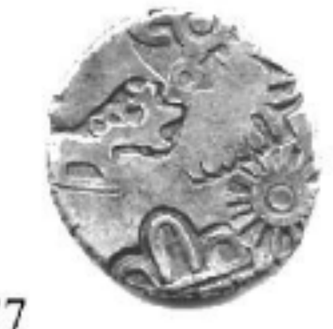
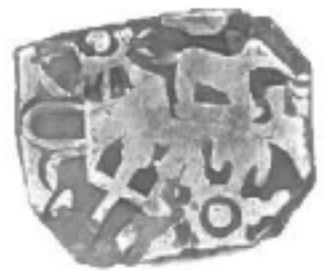
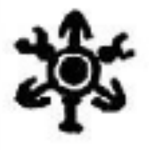
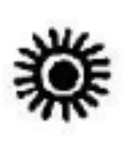
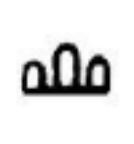
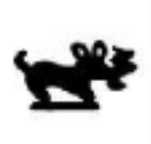
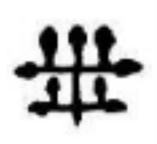
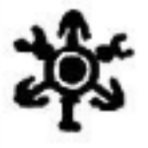
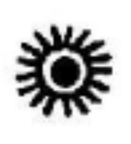
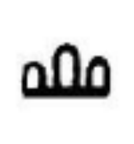
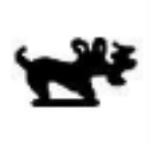
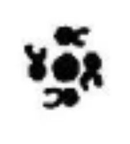
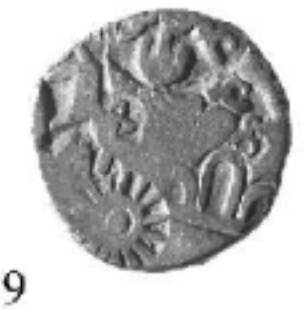
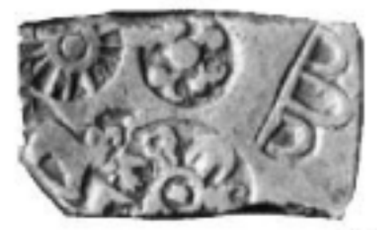
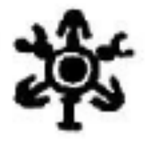
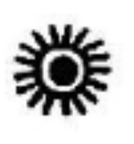
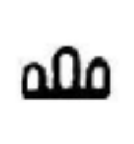
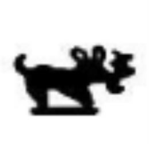
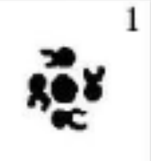
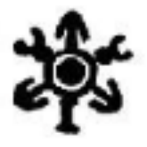
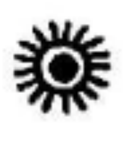
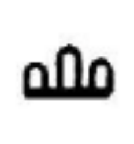
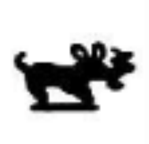
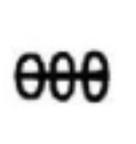
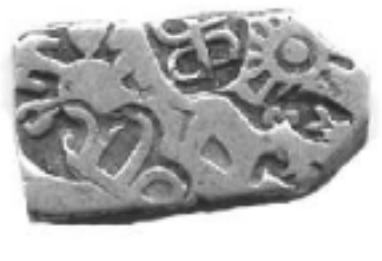
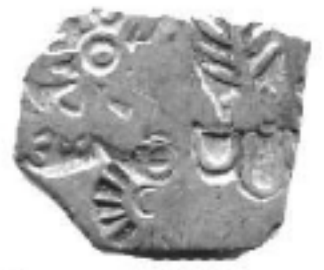
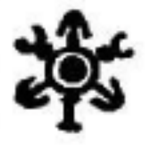
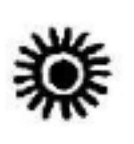
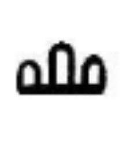
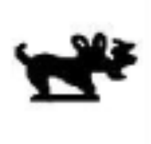
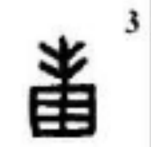
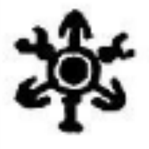
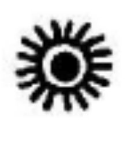
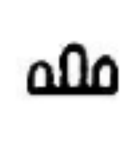
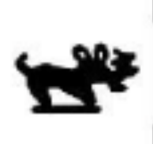
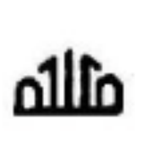
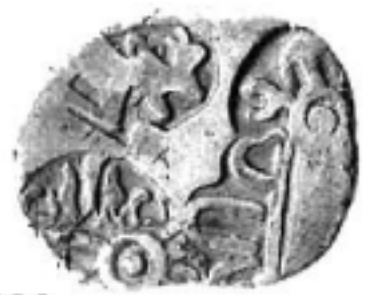
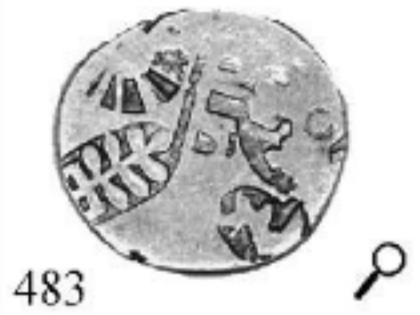
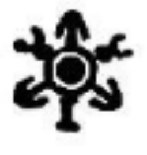
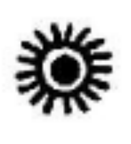
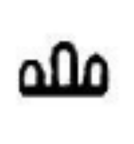
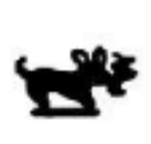
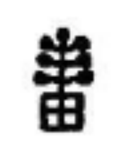
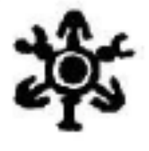
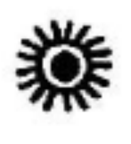
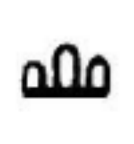
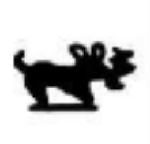
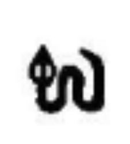
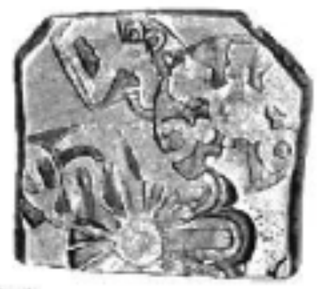
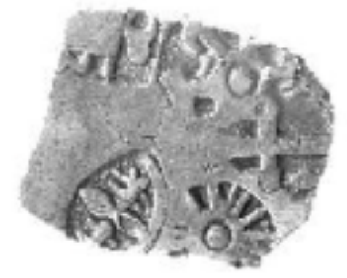
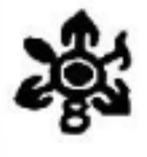
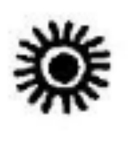
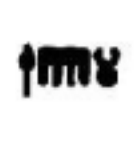
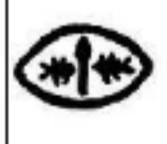
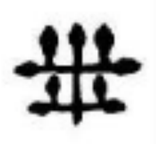
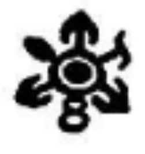
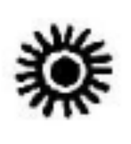
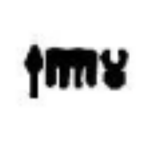
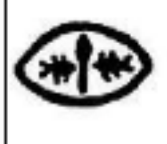
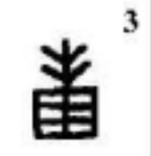
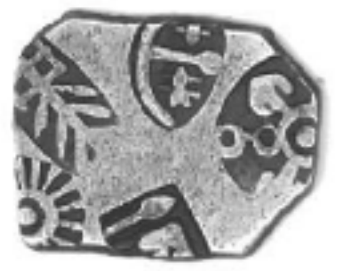
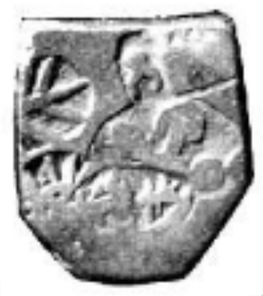
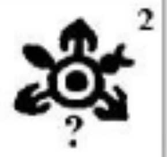
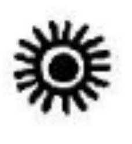
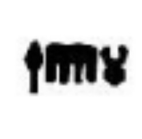
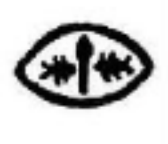
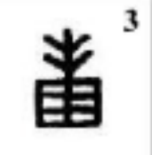
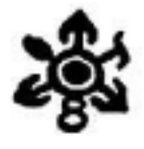
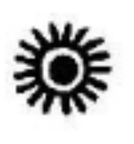
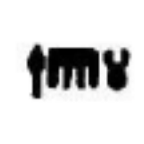
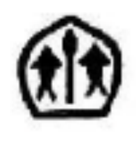
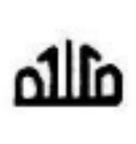
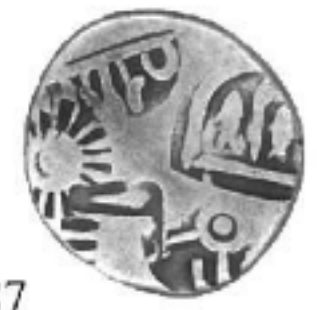
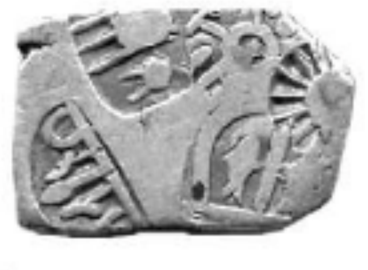
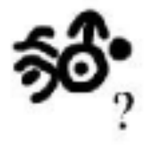
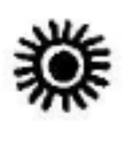
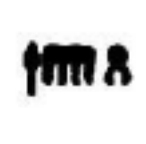
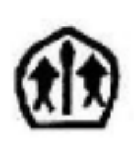
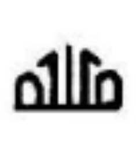
**Va.** Without bold reverse marks but with miniature marks. Early coins of this subseries were present in fresh condition in the 1924 Bhir mound hoard from Taxila, indicating their chronological position is later than the other coins in the hoard (Series IV, III and II). At the same time Series V continues the custom of using a wide variety of third marks, as in Series IV, but mostly adopting themes that do not include arches, except as three freestanding arches as in Series VI.

**Vb.** Coins with bold reverse marks, discussed further in the introduction to Series VI.

An important chronological marker is provided in the Types 507-508 (Series Va) and 510-511 (Series Vb). These represent the same types, but in the former case lacking bold reverse marks, and in the latter including them. This would seem to mark the point at which bold marks were introduced at the Series V mint to these types. The clarity of these conclusions is a little blurred because some coins of the transitional period, when bold marks were being introduced, do not seem to show a rigid conformity with the 'rules' we have just laid out. Reverse marks are sometimes indeterminate, poorly struck, or missing when they should be there, and sometimes there are extra marks apparently allied to the Bold marks, either regularly added on some types, or added randomly to unpredictable types.

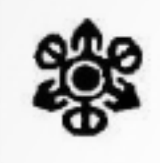
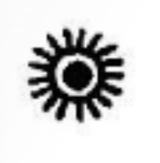
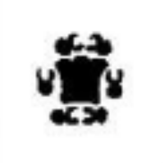
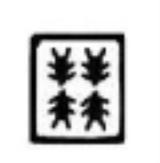
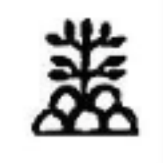
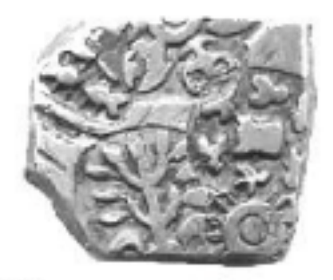
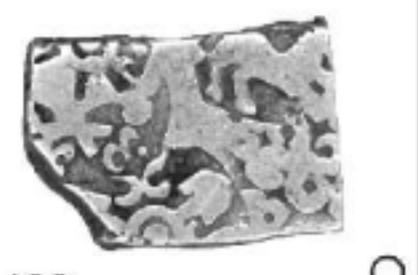
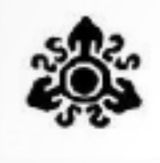
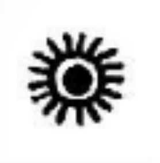
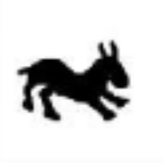
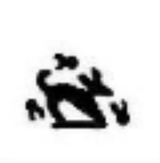
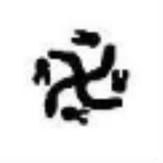
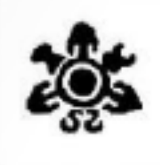
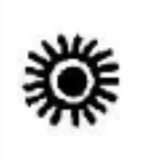
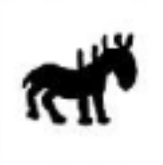
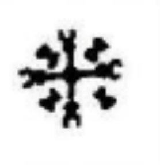
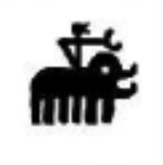
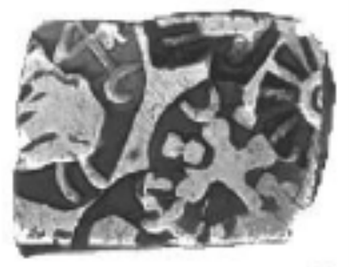
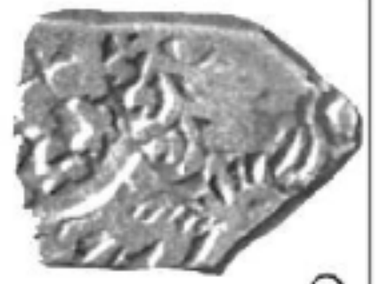
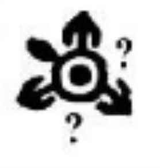
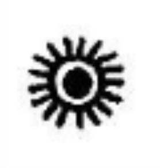
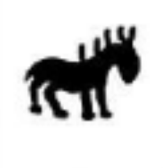
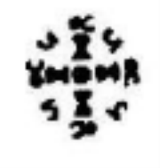
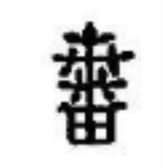
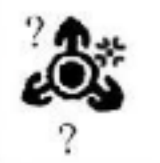
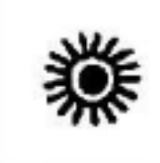
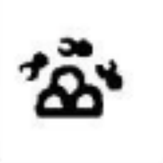
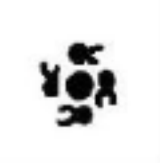
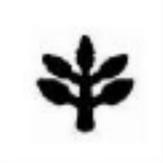
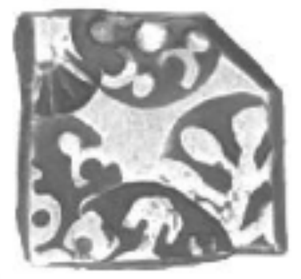
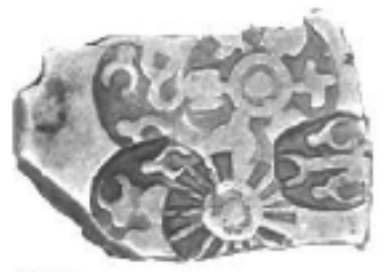
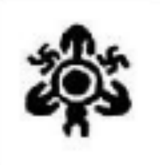
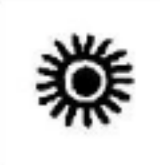
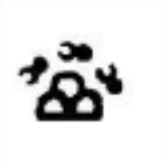
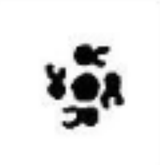
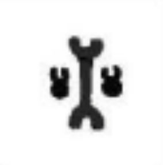
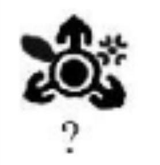
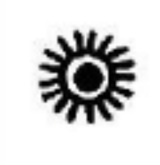
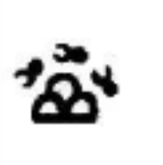
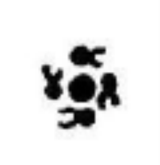
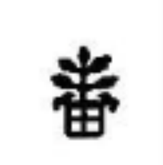
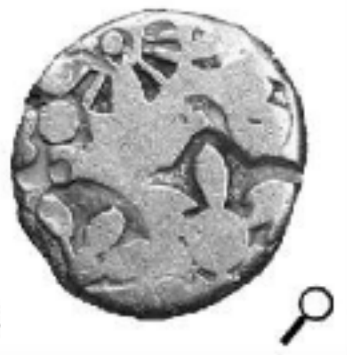
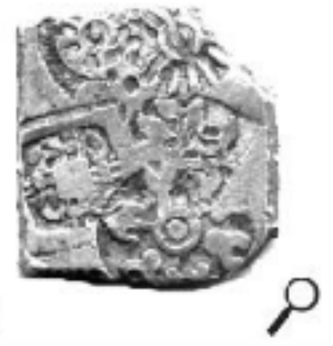
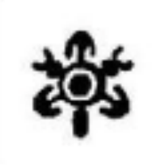
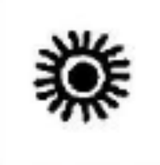
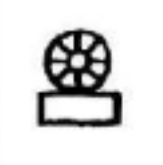
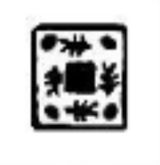
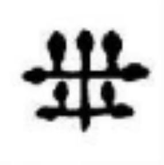
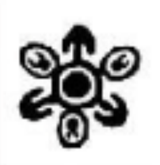
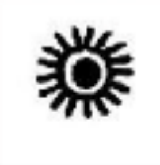
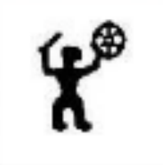
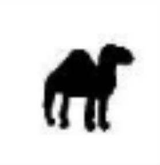
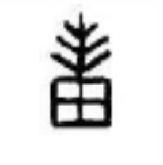
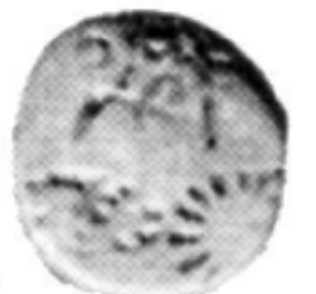
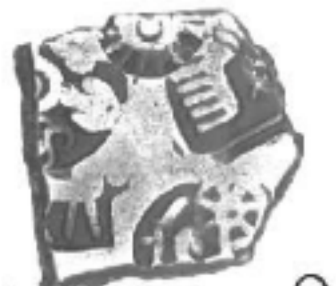
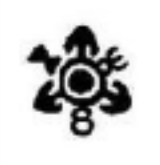
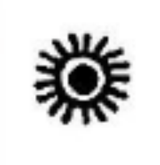
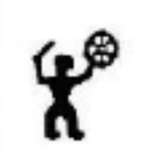
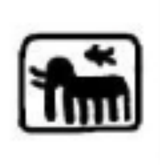
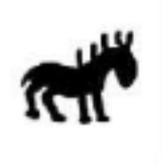
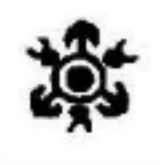
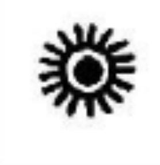
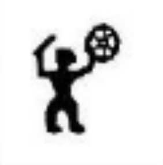
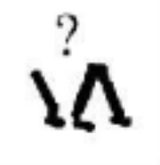
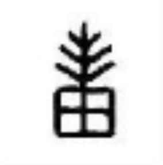
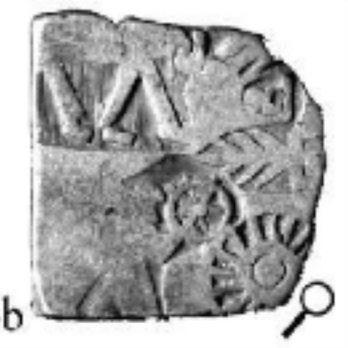
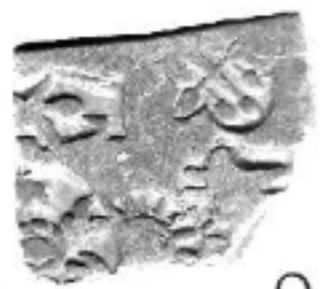
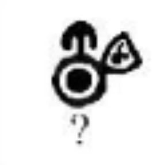
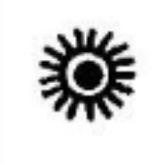
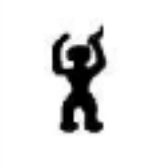
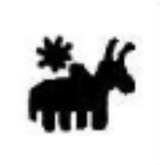
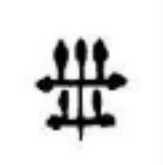
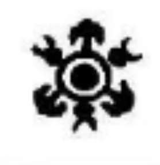
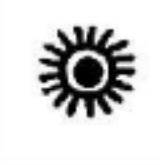
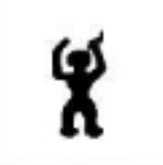
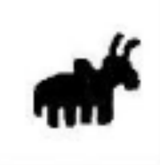
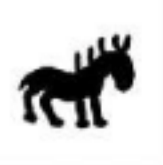
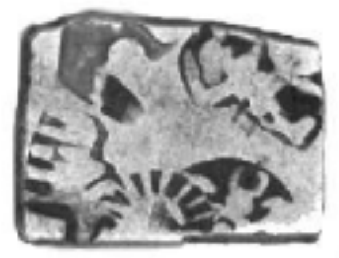
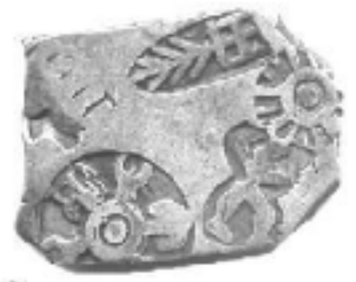
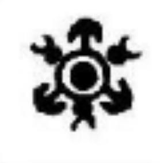
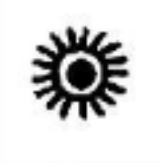
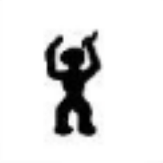
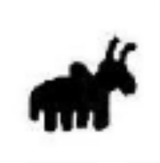
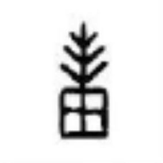
In overview, from the cumulative evidence of extra marks, flan size, selection of marks and hoard evidence there is little doubt that Series V occupies a place between Series IVd and VIb.

## SERIES Va Catalogue

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 477 | V I A 1<br>Am |  |  |  |  |  | VC |  477 |  478 |
| 478 | V I A 5<br>Am |  |  |  |  |  | R | | |
| 479 | V I A 14<br>Am |  |  |  |  |  | VC |  479 |  479a |
| 479a | V I A 14a<br>M 4027 |  |  |  |  |  [1] | XR | | |
| 480 | V I A 15<br>Am |  |  |  |  |  | VC |  480 |  481 |
| 481 | V I A 17<br>Am |  |  |  |  |  [3] | C | | |
| 482 | V I A 18<br>Am |  |  |  |  |  | AB |  482 |  483 |
| 483 | V I A 102<br>Am |  |  |  |  |  | S | | |
| 484 | V II A 103<br>Am |  |  |  |  |  | XC |  484 |  485 |
| 485 | V II A 5<br>Am |  |  |  |  |  | N | | |
| 486 | V II A 17<br>Am |  |  |  |  |  [3] | VC |  486 |  486a |
| 486a | V II A 17*<br>M4054 |  [2] ? |  |  |  |  [3] | XR | | |
| 487 | V II B 18<br>Am |  |  |  |  |  | R |  487 |  487a |
| 487a | V II B 18*<br>Trade |  ? |  |  |  |  | VR | | |

[1] Taurines anti-clockwise [2] The six-armed symbol is incomplete but appears to be different from the previous type. [3] Fifth mark may be 16 or 17

## SERIES Va Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 488 | V III A 115<br>Am |  |  |  |  |  | XC |  488 |  489 |
| 489 | V IV A 104<br>Am |  |  |  |  |  | R | | |
| 490 | V IV B 105<br>Am |  |  |  |  |  | R |  490 |  491 |
| 491 | V IV C106<br>Am |  ? ? |  |  |  |  | VR | | |
| 492 | V V A 9<br>Am | ?  ? |  |  |  |  | VR |  492 |  493 |
| 493 | V V A 107<br>Am |  |  |  |  |  | N | | |
| 494 | V V A 108<br>BM |  ? |  |  |  |  | XR |  494 |  495 |
| 495 | V VI A 5<br>Am |  |  |  |  |  | XR | | |
| 496[1] | V VII A 16<br>Am |  |  |  |  |  | VR |  496 |  496a |
| 496a[2] | V VII B 19<br>A |  |  |  |  |  | R | | |
| 496b | V VII C 16<br>BB |  |  |  | ?  |  | XR |  496b |  497 |
| 497 | V VIII A 5<br>Am |  ? |  |  |  |  | VR | | |
| 498 | V VIII A 19<br>Am |  |  |  |  |  | S |  498 |  499 |
| 499 | V VIII A 16[3]<br>Am |  |  |  |  |  | C | | |

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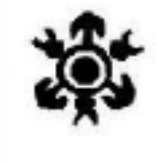
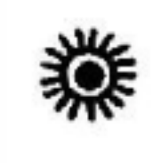
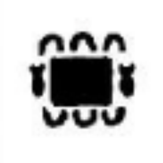
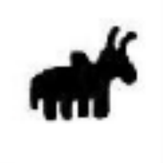
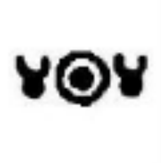
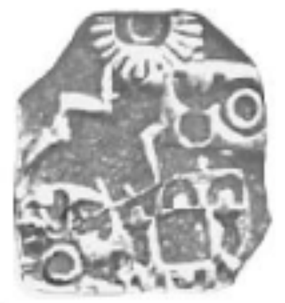
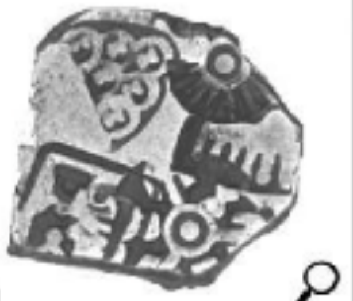
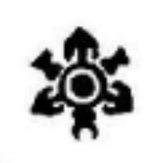
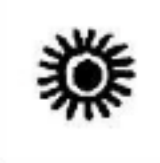
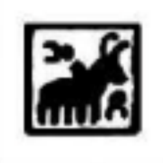
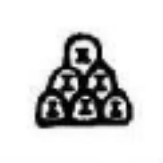
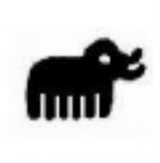
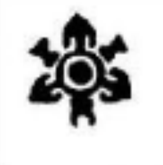
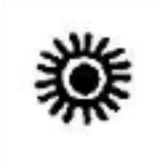
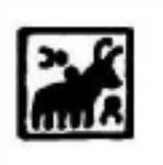
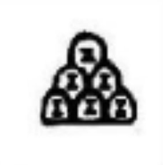
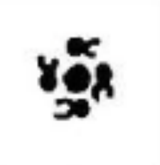
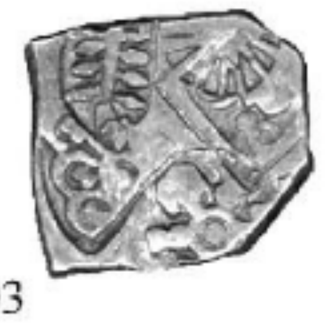
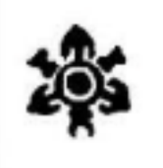
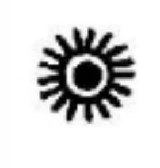
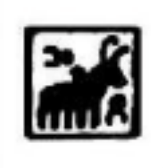
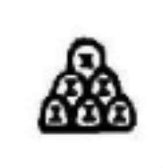
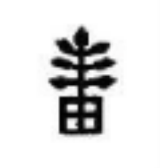
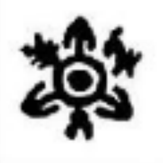
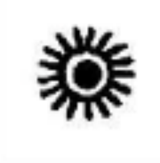
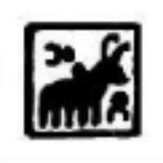
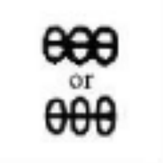
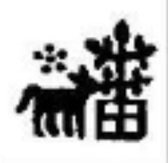
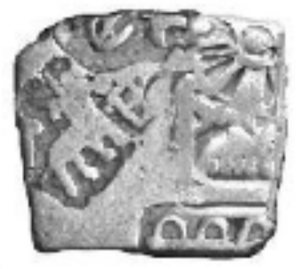
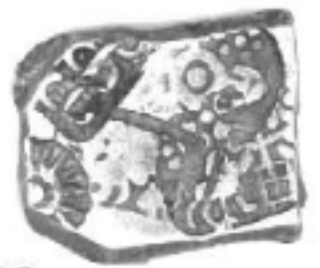
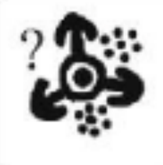
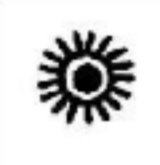
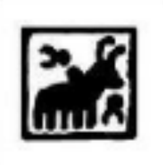
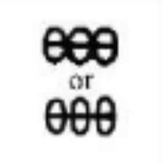
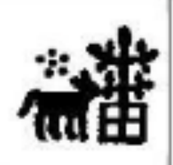
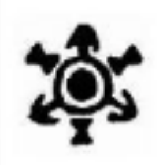
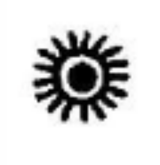
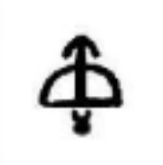
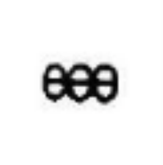
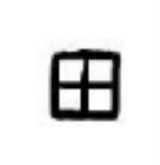
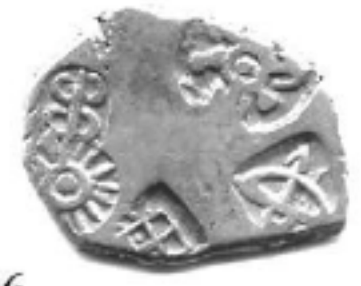
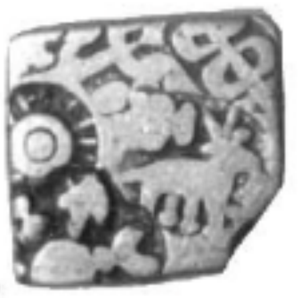
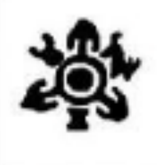
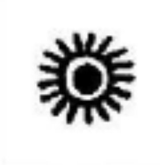
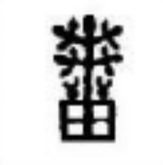
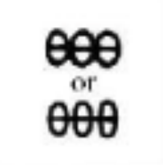
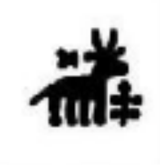
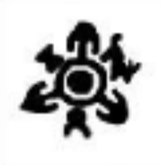
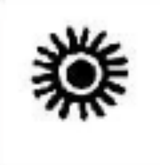
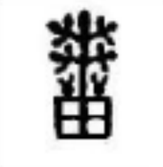
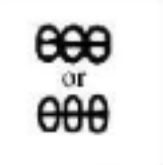
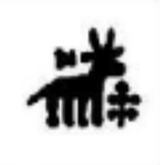
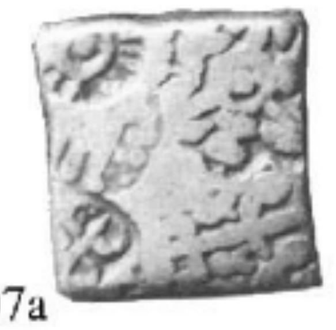
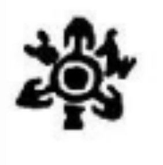
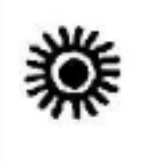
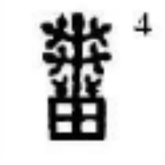
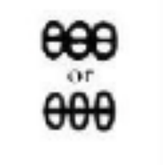
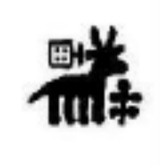
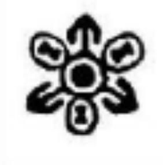
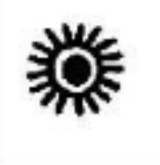
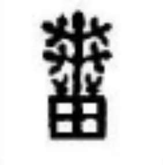
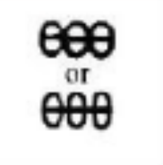
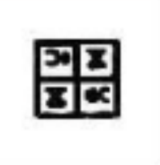
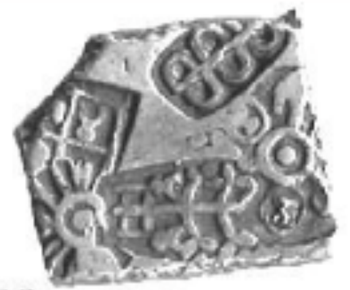
[1] Parallels to V VII are seen in Series VIII 604-607. [2] Formerly type 504. [3] Fourth mark has no symbol above back thus new classification V VIII A 16, formerly V VIII B 16.

## SERIES Va Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 500 | V IX A 2<br>Am |  |  |  |  |  | XR |  500 |  501 |
| 501 | V X A 1<br>Am |  |  |  |  |  | N | | |
| 502 | V X A 14<br>Bhi |  |  |  |  |  | XR | no image available<br>502 |  503 |
| 503[1] | V X A 102<br>Am |  |  |  |  |  | N | | |
| 505 | V XI B 109<br>Am |  |  |  |  |  | C |  505 |  505a |
| 505a | V XI B 109*<br>RT | ?  |  |  |  |  | XR | | |
| 506 | V XII A 20<br>Am |  |  |  |  |  | VC |  506 |  507 |
| 507 | V XIIIA 21[2]<br>Am |  |  |  |  |  | XC | | |
| 507a | V XIII A 21b<br>M 4126 |  |  |  |  |  | XR |  507a | no image available<br>508 |
| 508[3] | V XIII A 21a<br>Am |  |  |  [4] |  |  | VR | | |
| 509 | V XIII A110<br>Am |  |  |  |  |  | XC |  509 | |
| | | | | | | | | | |

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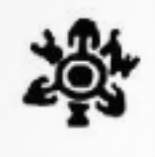
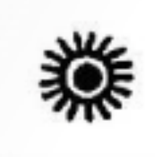
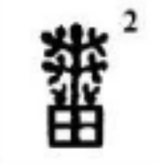
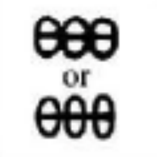
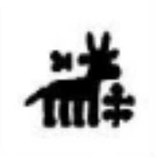
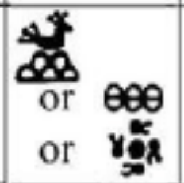
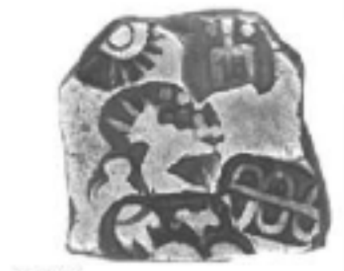
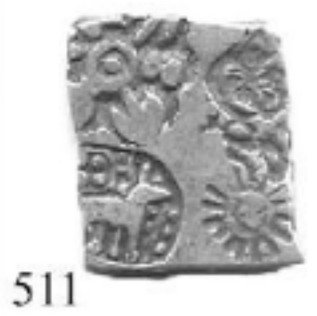
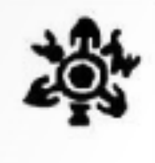
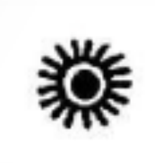
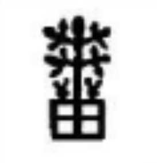
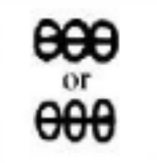
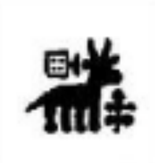
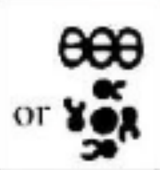
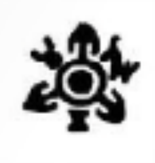
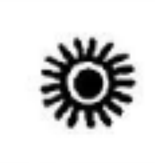
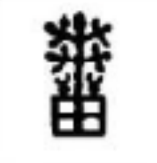
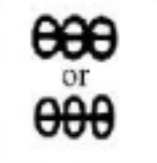
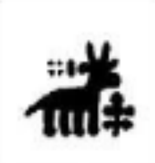
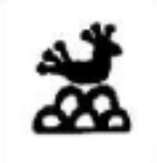
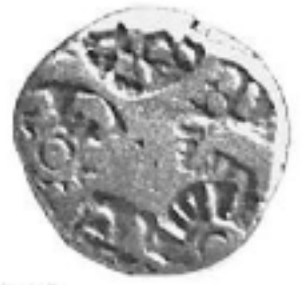
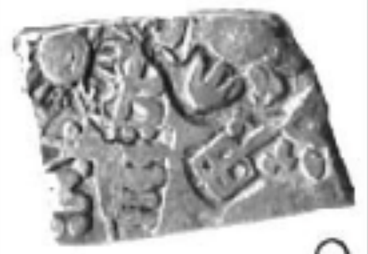
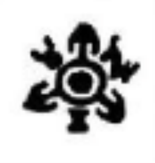
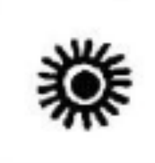
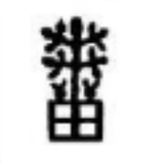
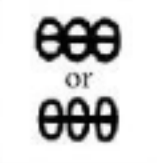
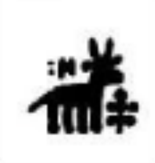
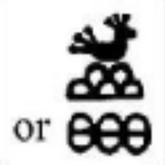
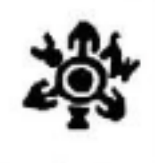
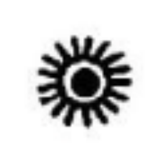
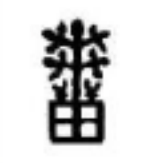
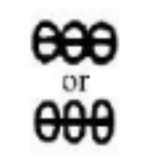
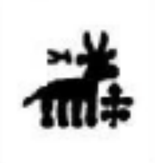
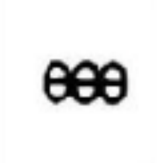
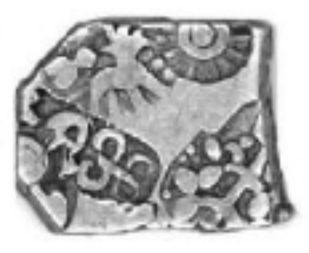
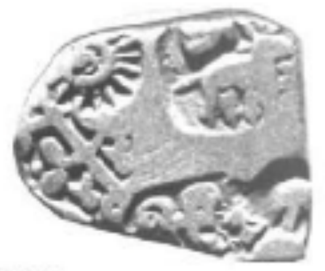
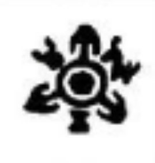
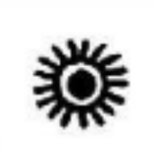
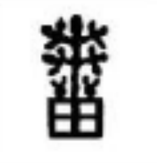
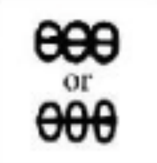
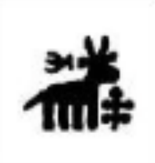
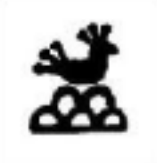
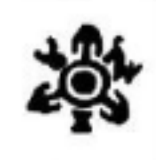
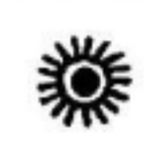
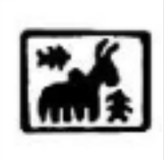
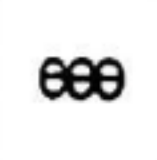
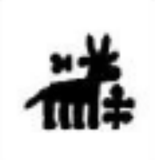
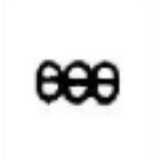
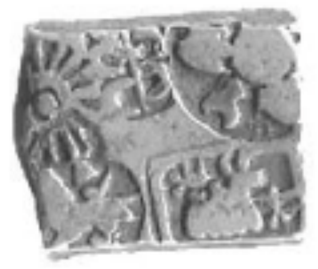
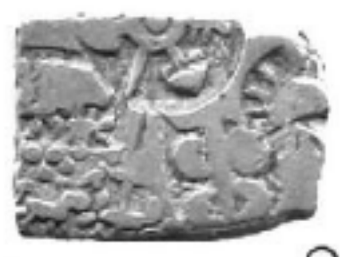
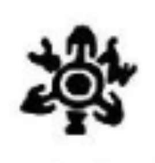
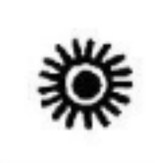
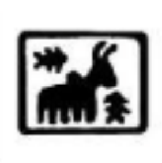
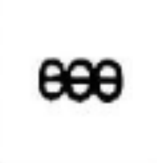
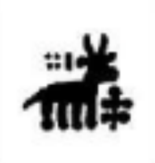
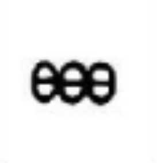
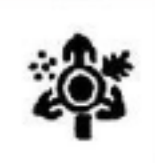
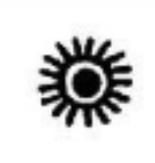
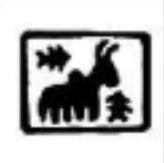
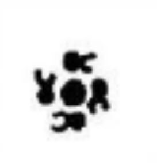
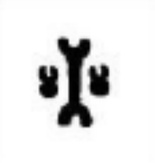
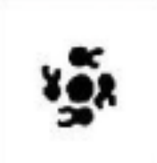
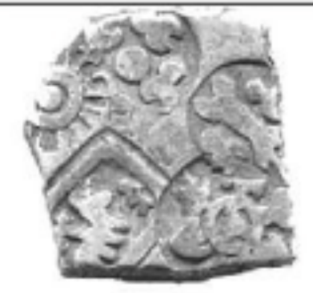
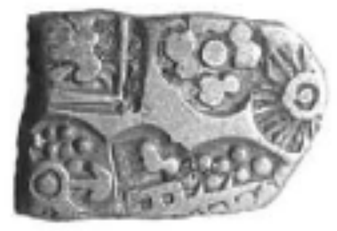
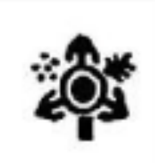
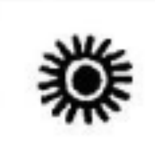
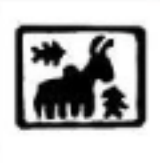
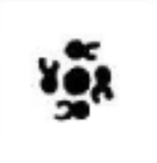
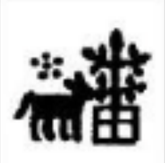
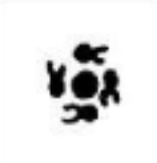
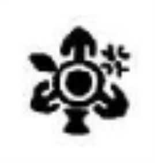
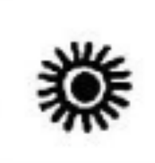
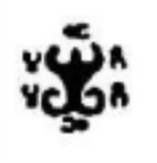
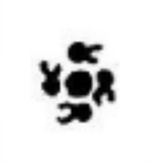
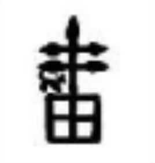
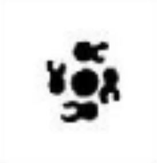
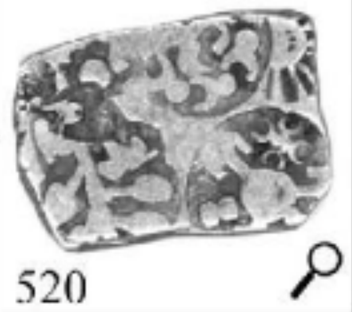
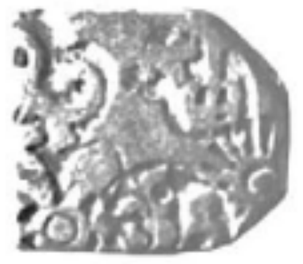
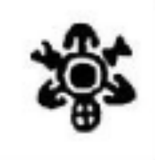
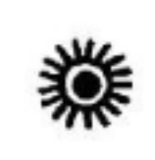
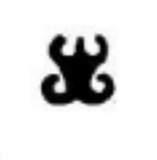
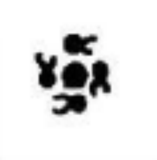
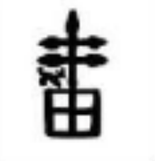
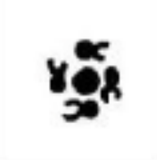
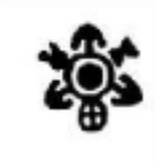
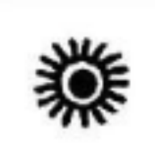
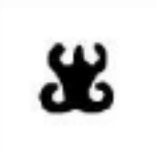
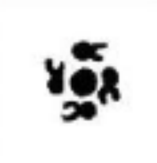
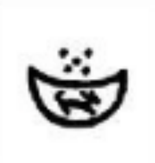
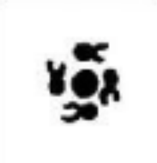
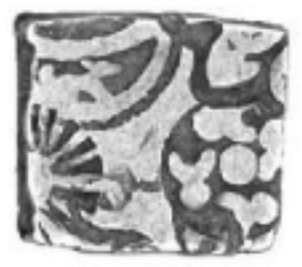
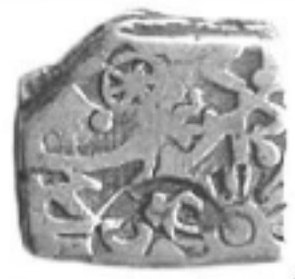
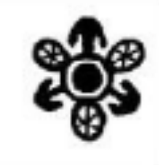
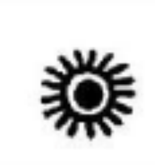
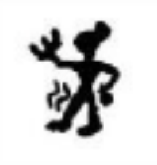
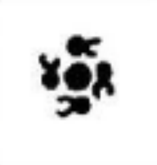
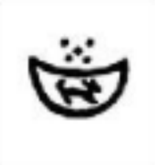
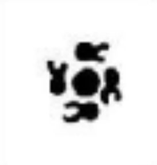
[1] Type 504 becomes 496a. [2] Also occurs in Series Vb with bold reverse mark.
[3] Also occurs in Series Vb with bold reverse mark. [4] This mark sometimes has dots beside the tree.

## SERIES Vb Catalogue

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | REV. | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | | |
| 510 | V XIV A 21[1]<br>Am |  |  |  [2] |  or |  |  or or | XC |  510 |  511 |
| 511 | V XIV A 21a[1]<br>Am |  |  |  |  or |  |  or | C | | |
| 512 | V XIV A 21b<br>Am |  |  |  |  or |  |  | N |  512 |  513 |
| 513 | V XIV A 21c<br>Am |  |  |  |  or |  |  or | S | | |
| 514 | V XIV A 21d<br>Am |  |  |  |  or |  |  | R |  514 |  515 |
| 515 | V XIV A 21e<br>Am |  |  |  |  or |  |  | VR | | |
| 516 | V XV A 21<br>Am |  |  |  |  |  |  | VC |  516 |  517 |
| 517 | V XV A 21b<br>Am |  |  |  |  |  |  | N | | |
| 518 | V XV B 107<br>Am |  |  |  |  |  |  | AB |  518 |  519 |
| 519 | V XV B 109<br>Am |  |  |  |  |  |  | VC | | |
| 520 | V XVI A 111<br>Am |  |  |  |  |  |  | R |  520 |  521 |
| 521 | V XVI B111<br>Am |  |  |  |  |  |  | S | | |
| 522 | V XVI B 112<br>Am |  |  |  |  |  |  | N |  522 |  523 |
| 523 | V XVI C 112<br>Am |  |  |  |  |  |  | S | | |

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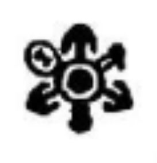
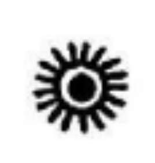
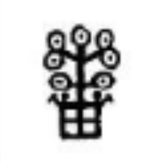
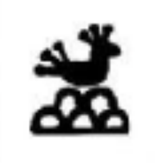
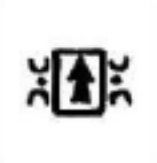
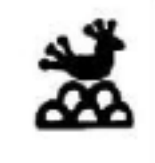
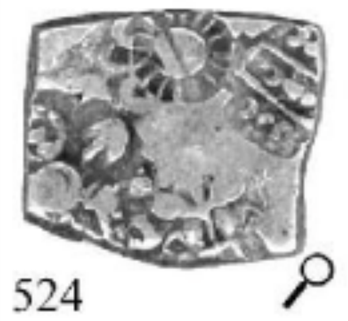
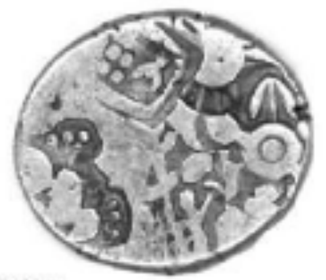
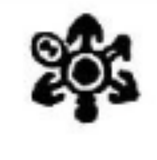
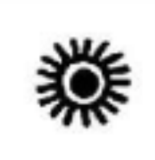
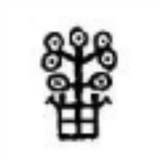
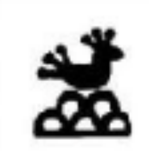
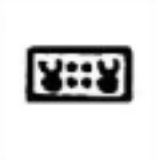
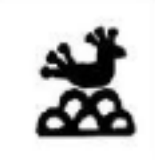
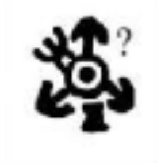
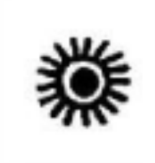
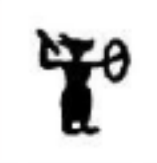
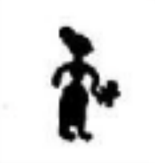
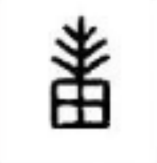
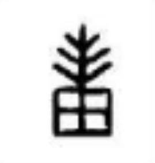
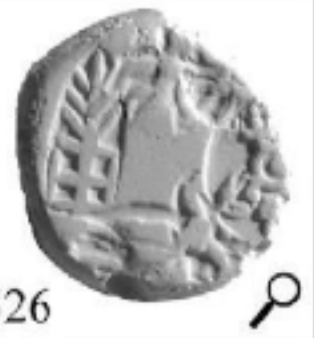
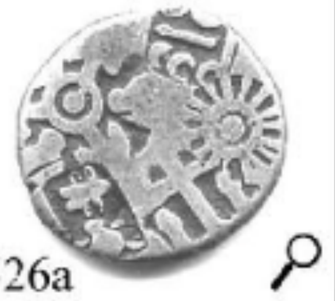
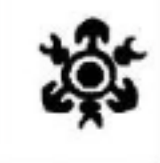
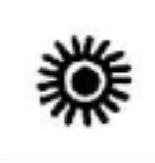
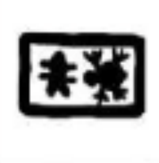
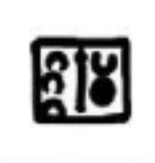
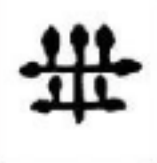
[1] See also Series Va. [2] This mark also seen sometimes with dots round the plant, see Type 514 and Unclear Coins U37.

## SERIES Vb Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | REV. | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | | |
| 524 | V XVII A 113<br>Am |  |  |  |  |  |  | R |  524 |  525 |
| 525 | V XVII A 114<br>Am |  |  |  |  |  |  | R | | |
| 526 | V XVIII A 16<br>Am |  ? |  |  |  |  |  | R |  526 |  526a |
| 526a | V XIX A 5[1]<br>RT |  |  |  |  |  | ? | XR | | |

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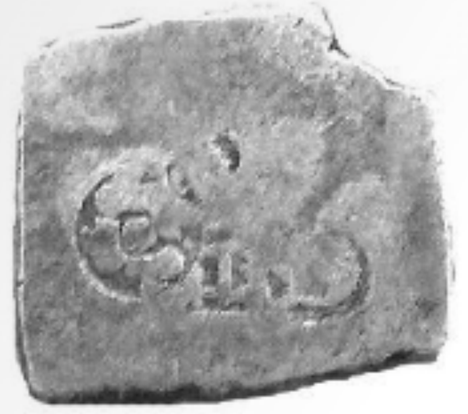
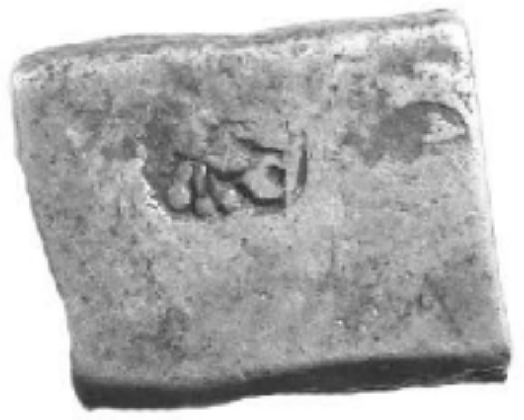
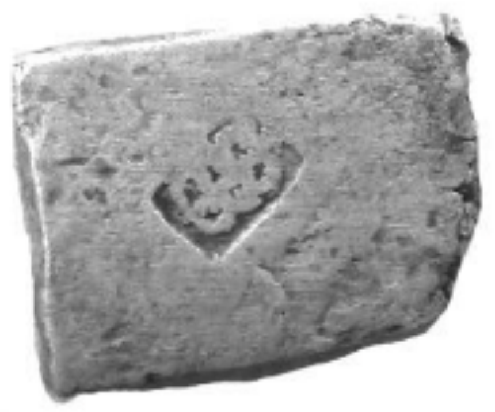
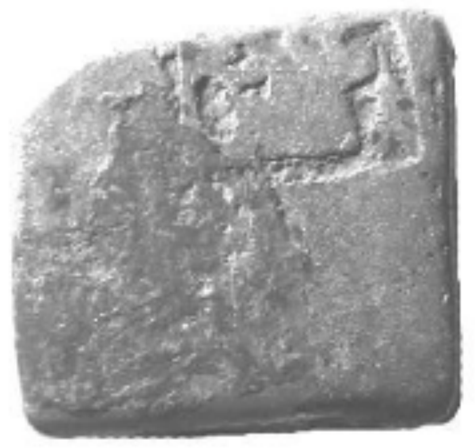
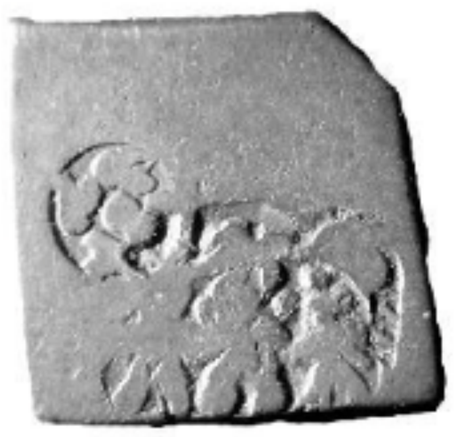
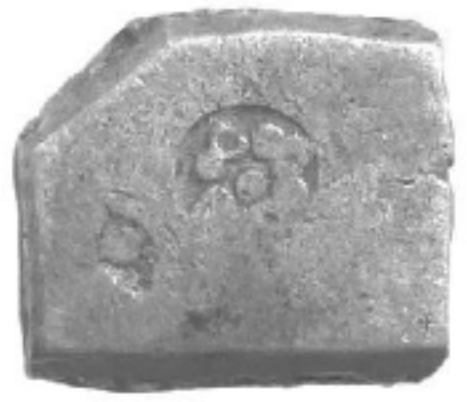
[1] The six-armed symbol suggests Series VI but the other marks suggest Series V.

## SERIES Vb reverses

| | | |
|---|---|---|
|  |  |  |
| 510 hybrid with mark 14 plus two bankers' marks | 511 with peacock mark, (265) not the normal marks. A small proportion of Vb coins do not conform with the normal reverse bold marks | 513 with mark 15 |
|  |  |  |
| 516 with bull (third mark on obv.) instead of normal mark | 518 with mark 14, two small additional marks (possibly bankers') plus three human figures mark as seen on  Series VII coins | 523 with mark 16 |

# Series VI

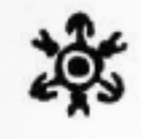
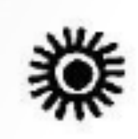
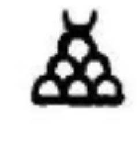
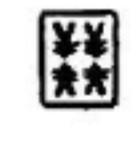
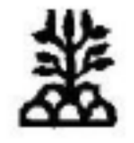
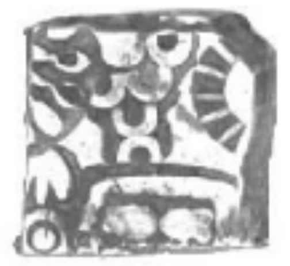
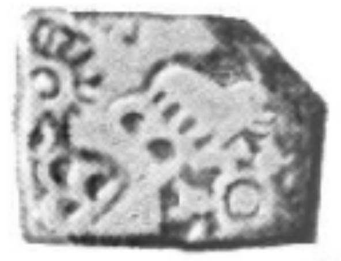
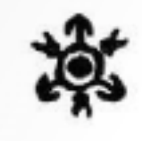
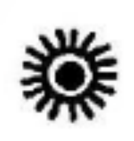
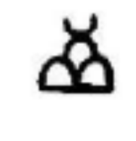
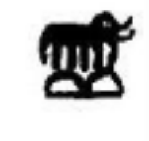
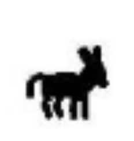
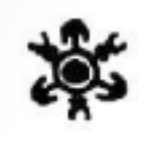
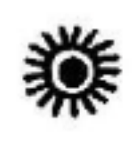
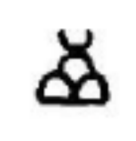
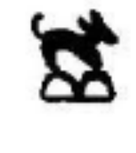
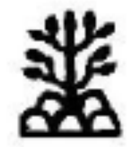
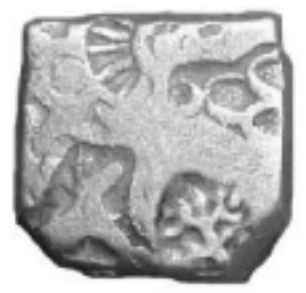
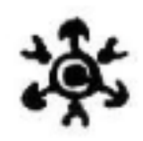
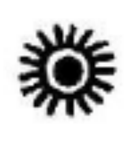
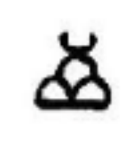
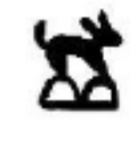
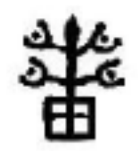
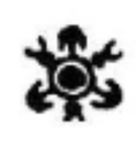
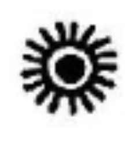
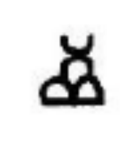
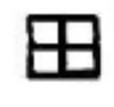
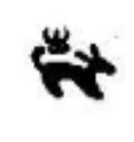
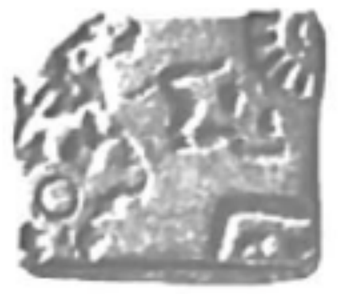
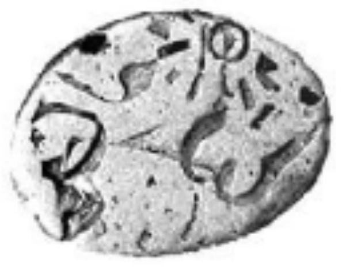
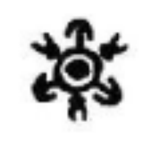
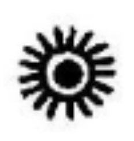
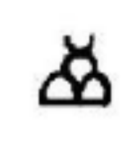
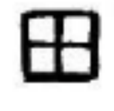
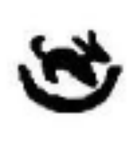
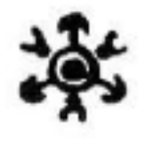
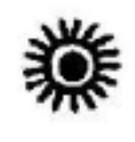
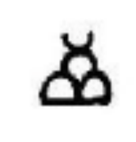
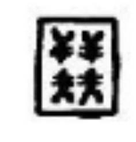
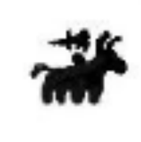
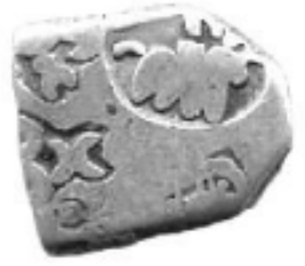
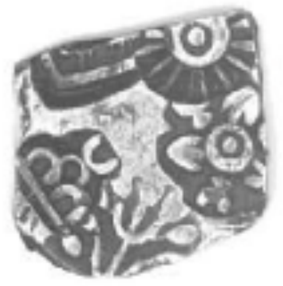
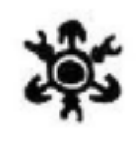
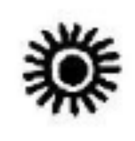
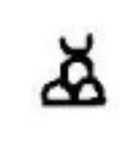
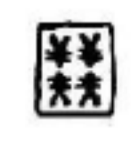
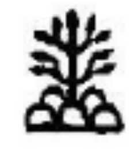
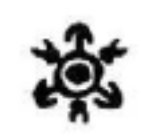
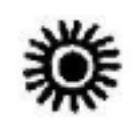
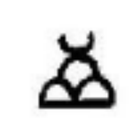
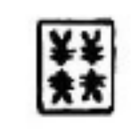
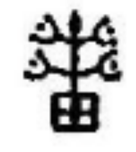
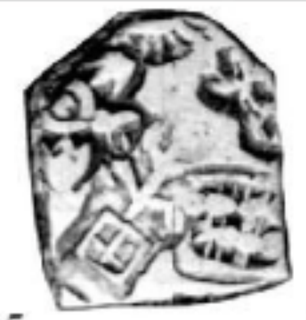
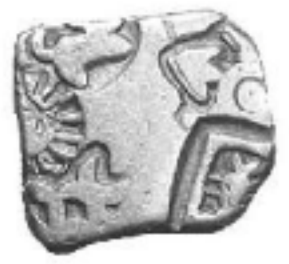
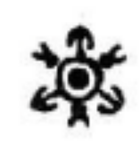
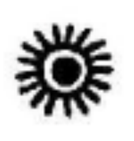
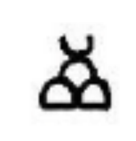
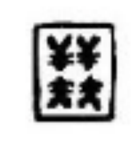
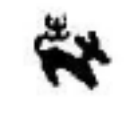
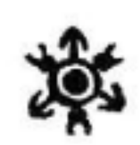
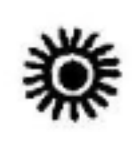
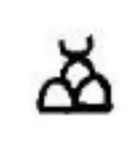
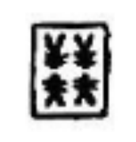
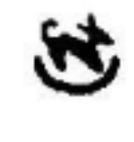
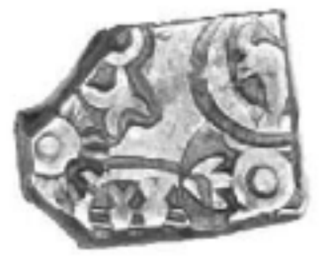
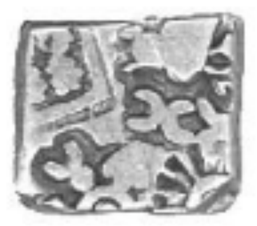
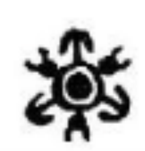
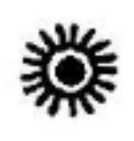
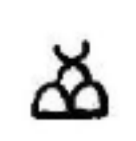
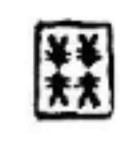
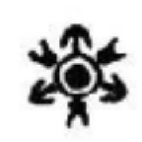
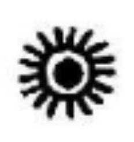
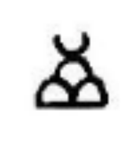
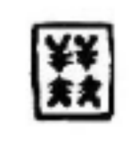
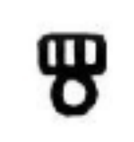
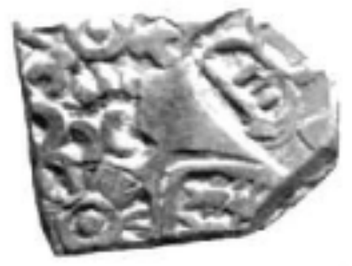
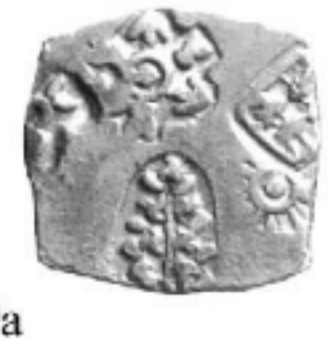
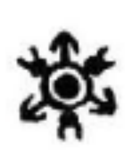
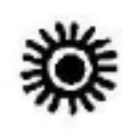
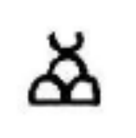
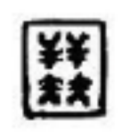
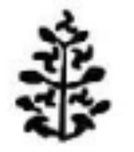
Coins in Series VI continue the small sizes of Series V but have three arches and crescent as third mark, or rarely six arches with no crescent. Like Series V they are divided into VIa, a short series with no bold reverse marks, and VIb, the greater number with bold reverse marks. In Series Vb and VIb, in most cases the bold reverse mark is a replica of the fourth obverse mark, but certain classes break this rule. In Series Vb, Class V XIV uses several different reverse marks, including the fourth obverse mark as one of them. The rare classes V XVIII  also breaks the rule, and in Series VI, classes VI III, VI IVA, B, and part of C, VI IV E and F and VI V also use a different reverse mark.

A further distinctive characteristic of VIa and VIb is the uniform use of a single six-armed symbol comprising alternating arrows and taurines. The abrupt reversion from increasingly elaborate six-armed symbols to this simple form, once introduced, endures without exception until the very end of the *karshapana* coinage. Interestingly this event is not coincident with the introduction of the bold reverse mark, which happens while the elaborate six-armed symbols are still use in Series Vb. The adoption of a single six-armed symbol makes it harder to support the idea that six-armed symbol variants represented mint signatures pure and simple, because that would imply the sudden closure of all the mints but one, just at the time when punchmarked coins were being struck in increasingly large numbers, clearly supporting a large expansion in commercial or military activity.

The chronological sequence of the issues in Series VI is not clearly defined. In overview, Va and Vb predate VIa and VIb, as described above in discussing the Gokulavarna hoard (Table 2), in which Series V had already introduced bold marks, but both Series VIa and VIb had probably not yet been issued. Thus the introduction of Series VI occurred at a time when coins were still being issued without bold marks at some mints, and the transition to bold reverse marks occurs over a time period embracing both Series V and VI.

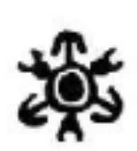
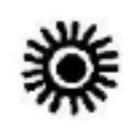
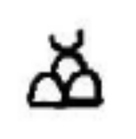
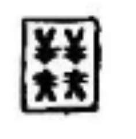
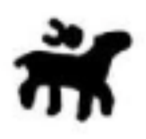
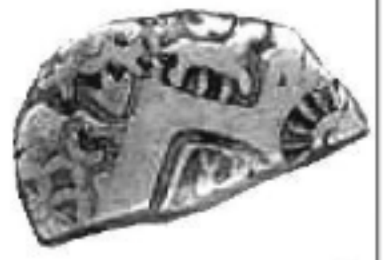
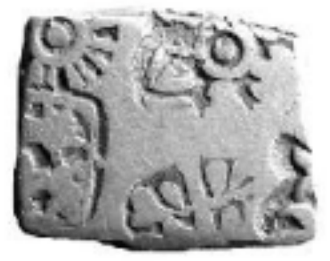
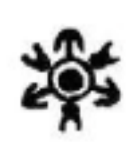
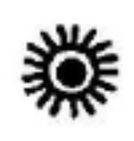
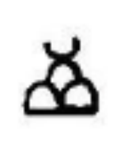
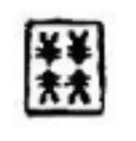
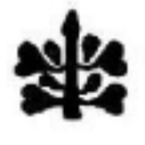
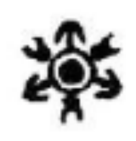
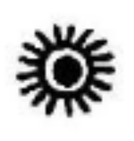
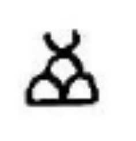
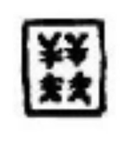
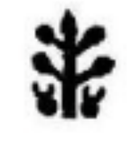
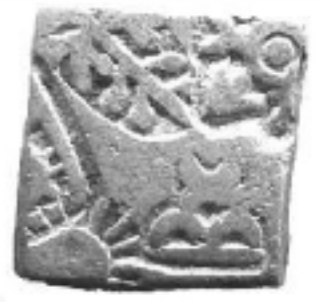
The sequence within VIb was laid out in the first edition without using the available evidence from hoards that show the late arrival of Types 560-566, 572, 574, 575, 582, 583, and 586, of which the latest is probably Type 566. Beyond this there is little evidence to chronologise the rest of Series VIb, and the sequence in the Catalogue must be treated as largely random.

## SERIES VIa Catalogue

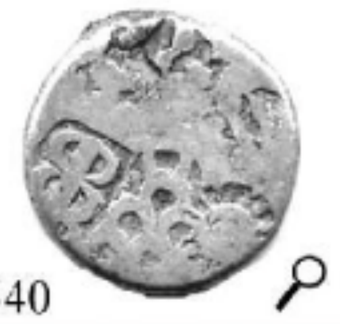
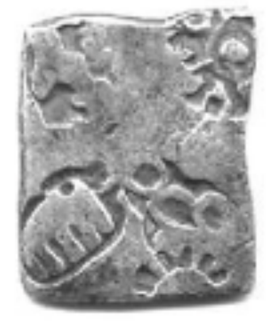
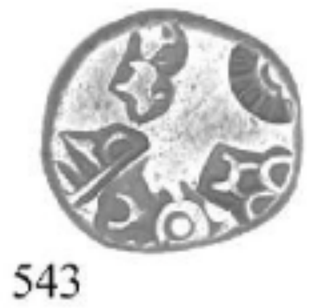
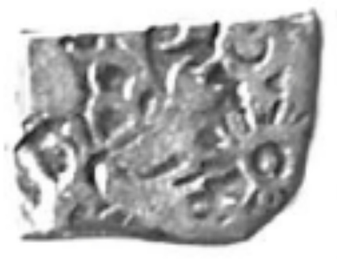
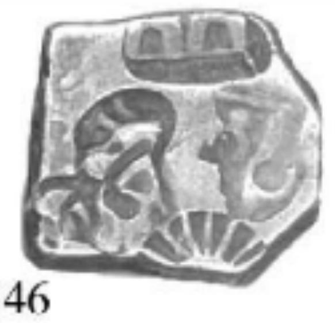
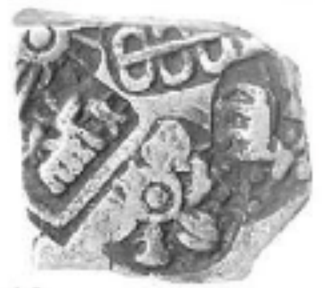
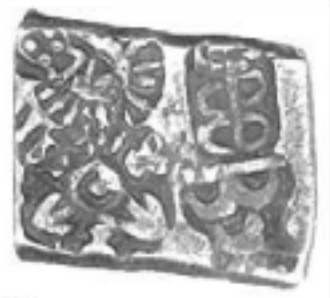
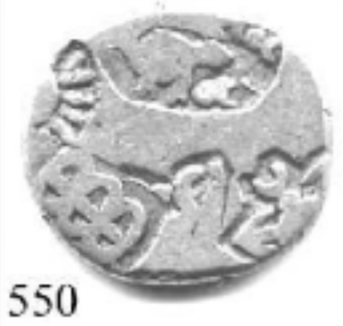
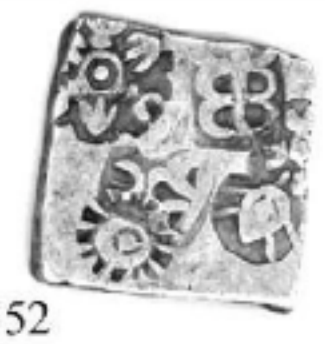
| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 527 | VI I A 115<br>Am |  |  |  |  |  | R |  527 |  528 |
| 528 | VI II A 19<br>Am |  |  |  |  |  | R | | |
| 529 | VI II B 115<br>Gul |  |  |  |  |  | VR | no image available<br>529 |  530 |
| 530 | VI II B 116<br>Am |  |  |  |  |  | N | | |
| 531 | VI II B 117<br>Am |  |  |  |  [1] |  | VR |  531 |  532 |
| 532 | VI II B 118<br>Am |  |  |  |  [1] |  | XR | | |
| 533 | VI II D 22<br>R2 & 3 |  |  |  |  |  | S |  533 |  534 |
| 534 | VI II D 115<br>Am |  |  |  |  |  | VC | | |
| 535 | VI II D 116<br>Am |  |  |  |  |  | S |  535 |  536 |
| 536 | VI II D 117<br>Am |  |  |  |  |  | N | | |
| 537 | VI II D 118<br>Am |  |  |  |  |  | VC |  537 |  538 |
| 538 | VI II D 119<br>Am |  |  |  |  | | C | | |
| 539 | VI II D 120<br>Ve |  |  |  |  |  | VR |  539 |  539a |
| 539a | VI II D 616<br>RT |  |  |  |  |  | XR | | |

[1] Fourth mark not clear

## SERIES VIa Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 539b | VI II D 617<br>RT |  |  |  |  |  | XR |  539b |  539c |
| 539c | VI II D 618<br>A |  |  |  |  |  | XR | | |
| 539d | VI II D 619<br>A |  |  |  |  |  | XR |  539d | |
| | | | | | | | | | |

## SERIES VIb Catalogue

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS 1 | 2 | 3 | 4 | 5 | REV. | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|---|
| 540 | VI III A 21<br>Am | | | | | | | R |  540 | no image available |
| 541 | VI III A 121<br>PLG | | | | | | ? | XR | | |
| 542 | VI IV A 1<br>Am | | | | | | [1]<br>or | XC |  542 | no image available<br>542a |
| 542a | VI IV A 533<br>BM [2] | | | | | | ? | XR | | |
| 543 | VI IV A 18<br>Am | | | | | | [1]<br>or | AB |  543 | no image available<br>544 |
| 544 | VI IV B 5<br>PLG | | | | | | ? | XR | | |
| 545 | VI IV B 19<br>Am | | | | | | or | R |  545 |  546 |
| 546 | VI IV B 129<br>Am | | | | | | or | VC | | |
| 547 | VI IV C 20<br>Tax | | | | | | ? | XR | no image available<br>547 |  548 |
| 548 | VI IV C 21<br>Am | | | | | [3] | or | C | | |
| 549 | VI IV C 21a<br>Am | | | | | [3] | or | N |  549 |  550 |
| 550 | VI IV C 23<br>Am | | | | | | or | XC | | |
| 551 | VI IV C 115<br>Pr | | | | | | ? | VR | no image available<br>551 |  552 |
| 552 | VI IV C 130<br>Am | | | | | | or | XC | | |

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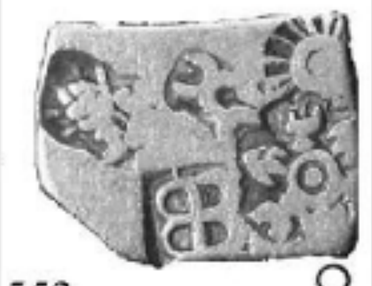
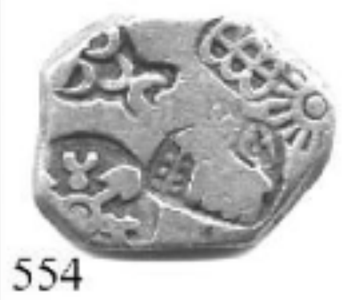
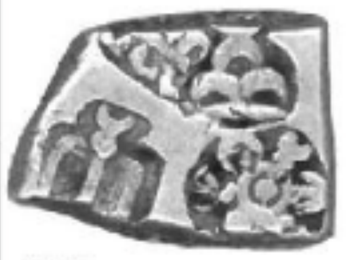
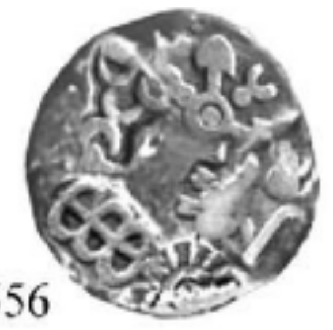
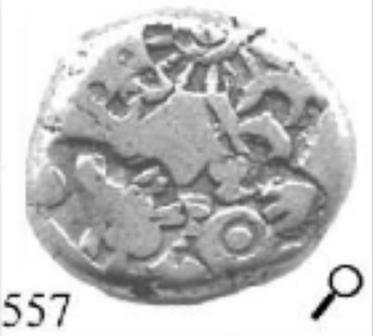
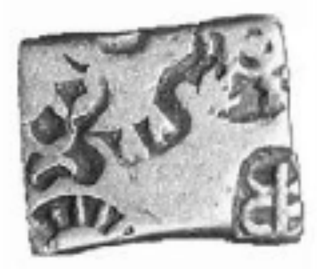
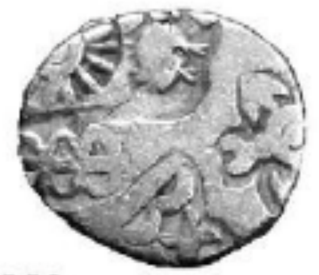
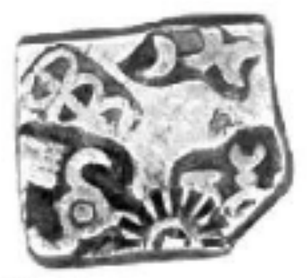
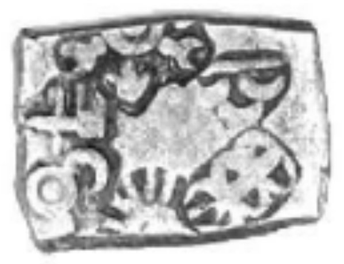
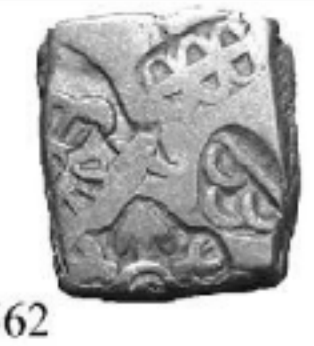
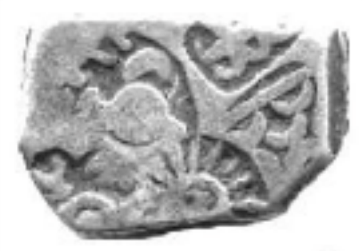
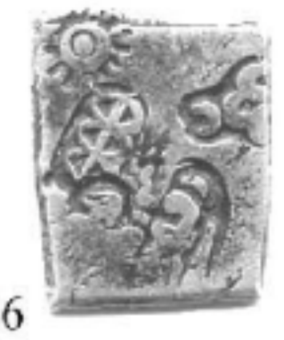
[1] Additional reverse marks often seen on these types include

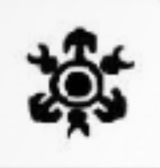
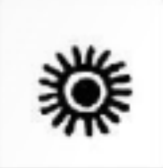
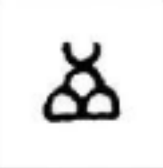
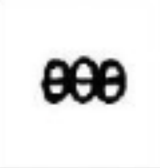
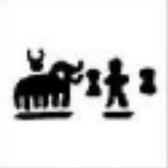
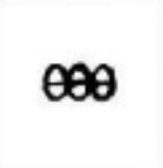
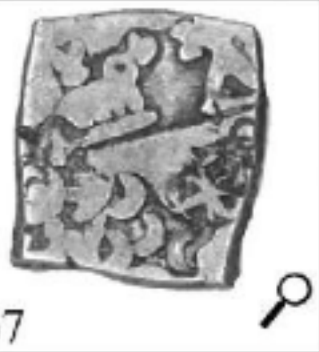
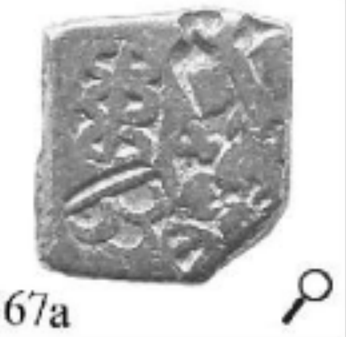
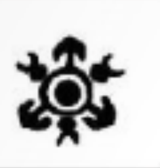
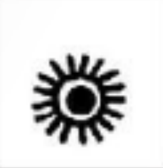
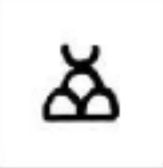
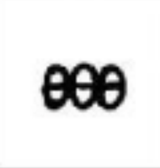
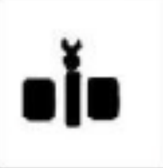
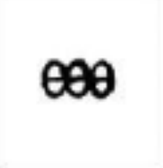
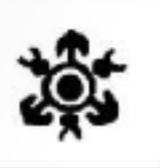
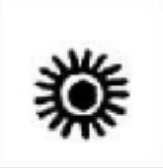
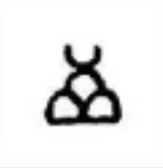
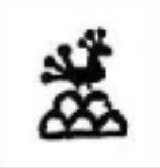
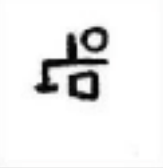
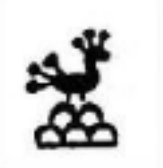
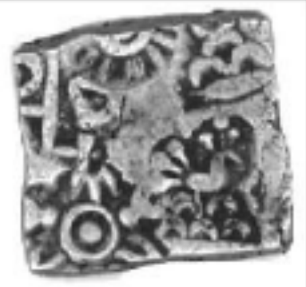
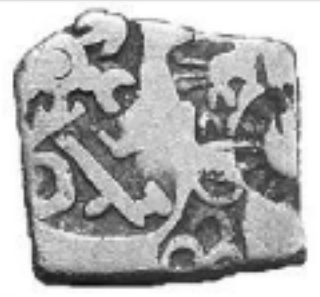
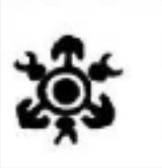
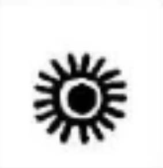
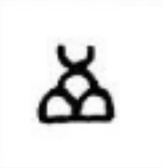
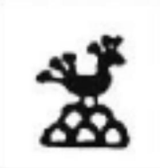
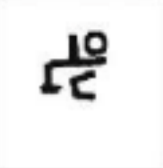
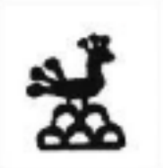
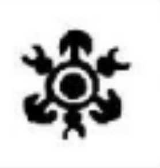
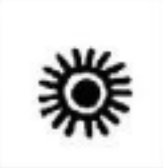
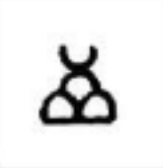
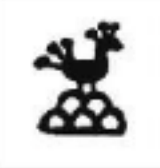
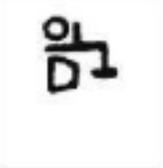
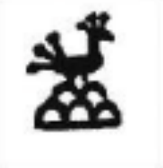
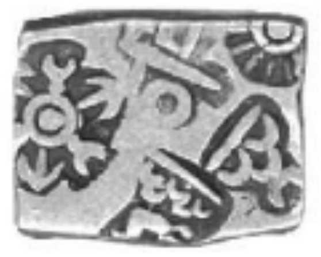
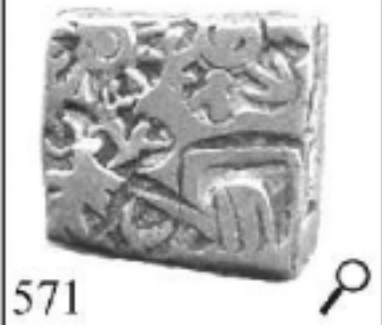
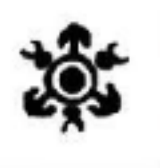
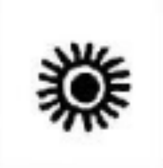
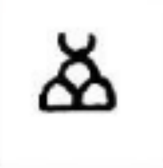
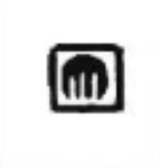
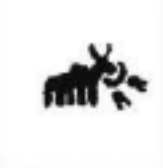
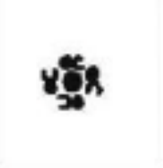
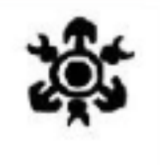
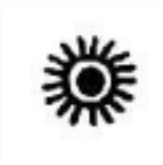
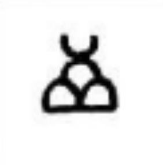
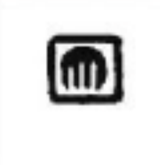
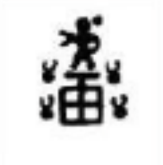
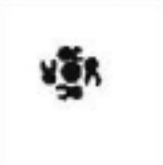
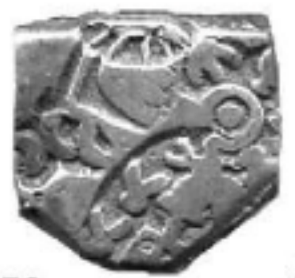
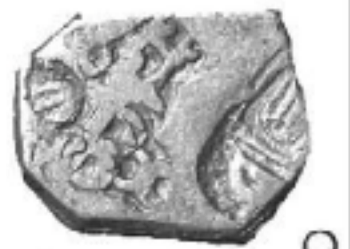
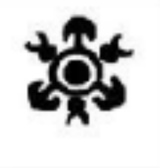
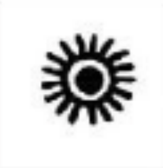
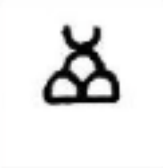
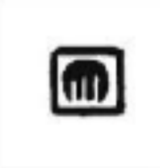
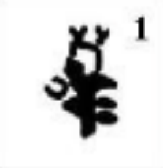
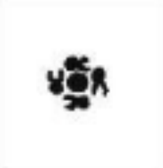
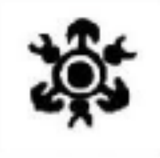
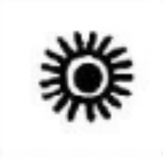
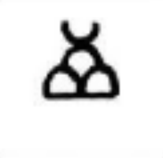
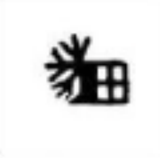
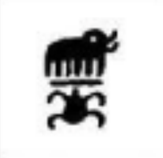
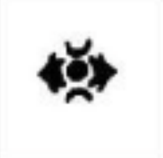
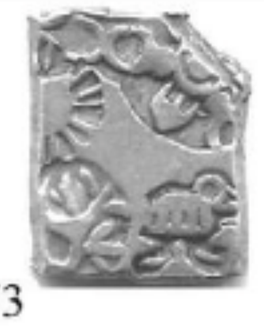
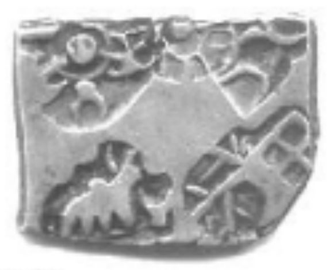
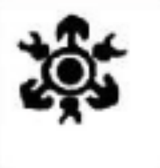
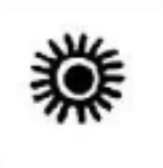
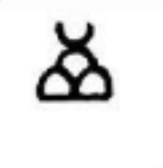
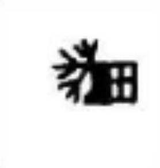
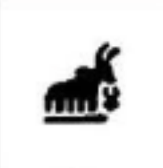
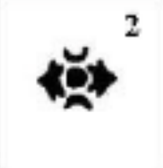
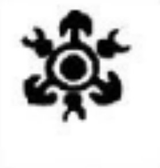
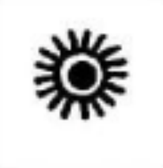
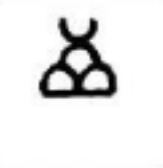
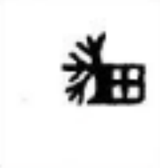
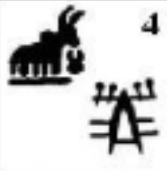
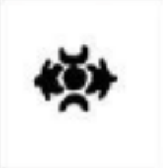
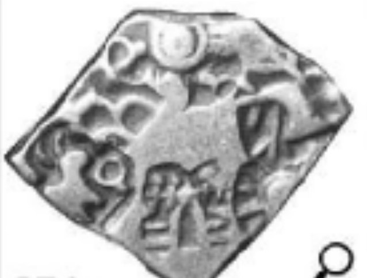
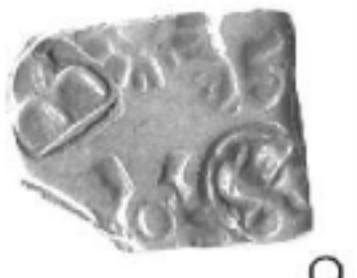
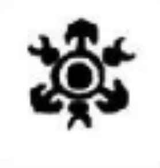
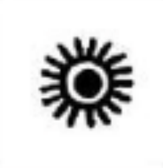
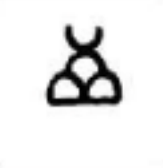
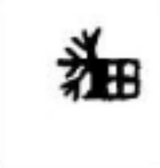
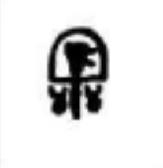
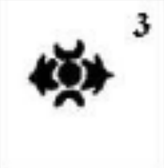
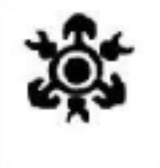
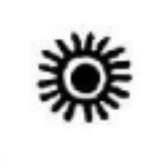
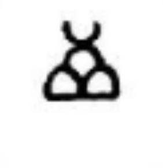
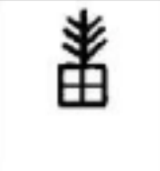
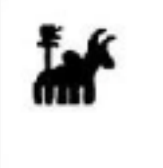
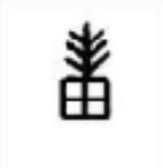
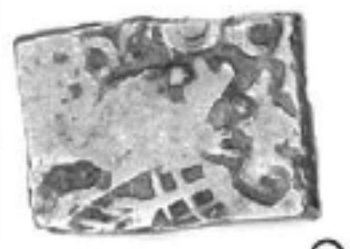
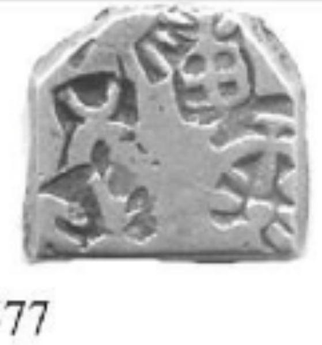
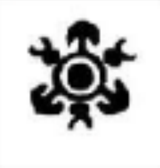
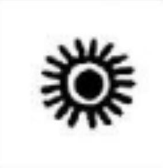
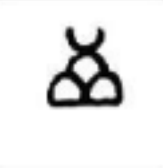
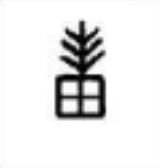
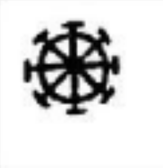
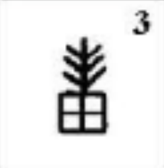
[3] Other variants of the mark above the deer may occur

[2] Errington 2003

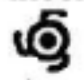
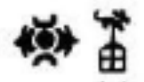
## SERIES VIb Catalogue contd.

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS 1 | 2 | 3 | 4 | 5 | REV. | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|---|
| 553 | VI IV C 131<br>Am | | | | | | or | N |  553 |  554 |
| 554 | VI IV C 132<br>A | | | | | | or | XR | | |
| 555 | VI IV C 133<br>Am | | | | | | | VC |  555 |  556 |
| 556 | VI IV C 134<br>Am | | | | | | | VC | | |
| 557 | VI IV C 135<br>Am | | | | | | | VC |  557 |  558 |
| 558 | VI IV C 136<br>Am | | | | | | | C | | |
| 559 | VI IV C 137<br>Am | | | | | | | VR |  559 |  560 |
| 560 | VI IV C 138<br>BM | | | | | | | N | | |
| 561 | VI IV C 138a<br>Pr | | | | | | | XR |  561 |  562 |
| 562 | VI IV C 139<br>MtM | | | | | | | XR | | |
| 563 | VI IV C 140<br>Pat | | | | | | | VR | no image available<br>563 |  564 |
| 564 | VI IV C 141<br>Pat | | | | | | | R | | |
| 565 | VI IV C 141a<br>Ve | | | | | | | XR | no image available<br>565 |  566 |
| 566 | VI IV C 142<br>BM | | | | | | | AB | | |

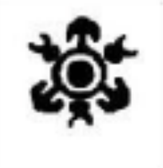
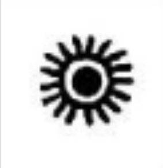
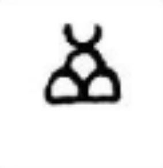
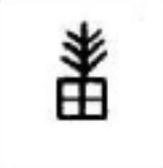
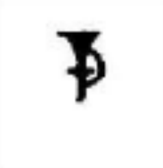
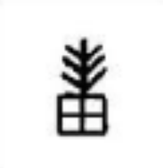
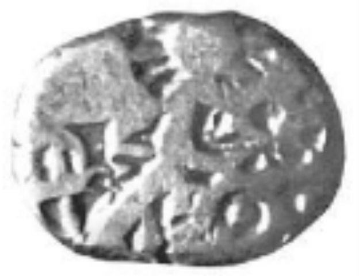
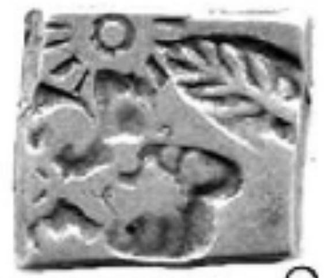
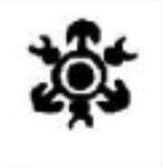
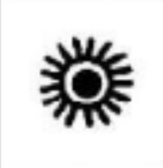
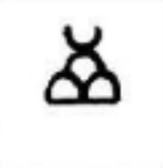
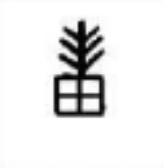
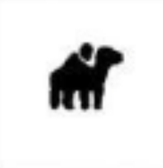
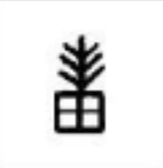
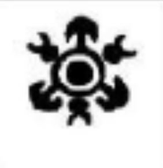
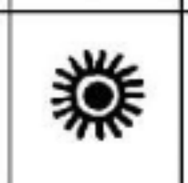
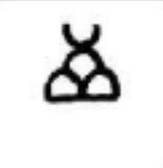
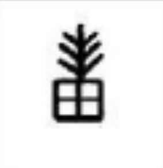
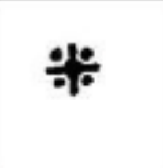
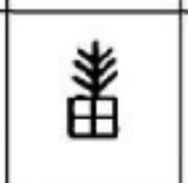
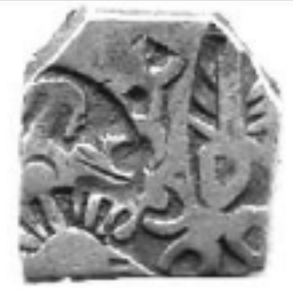
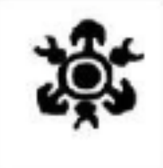
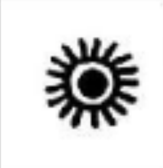
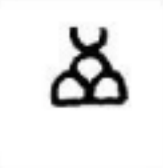
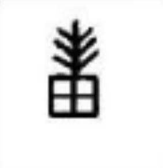
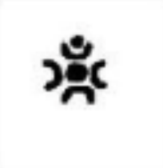
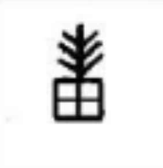
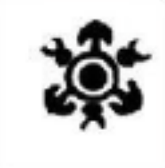
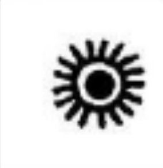
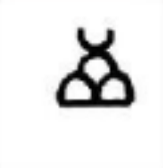
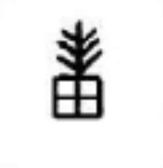
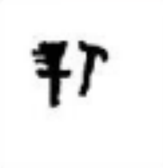
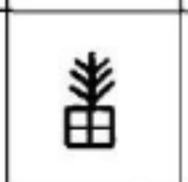
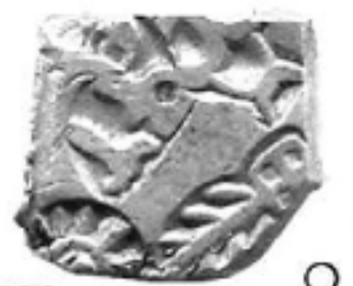
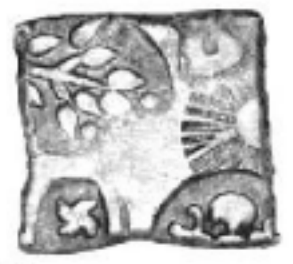
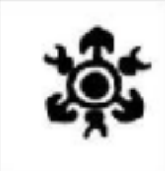
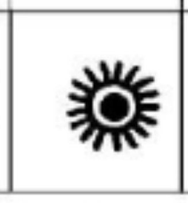
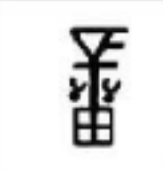
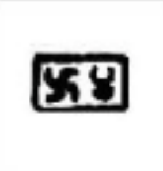
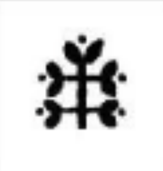
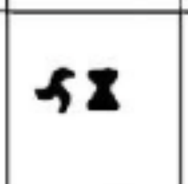
## SERIES VIb Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | REV. | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | | |
| 567 | VI IV C 143<br>BM |  |  |  |  |  |  | N |  567 |  567a |
| 567a | VI IV C 529<br>A |  |  |  |  |  |  | XR | | |
| 568 | VI IV D 24<br>Am |  |  |  |  |  |  | XC |  568 |  569 |
| 569 | VI IV D 24a<br>Am |  |  |  |  |  |  | S | | |
| 570 | VI IV D 25<br>Am |  |  |  |  |  |  | AB |  570 |  571 |
| 571 | VI IV E 27<br>Am |  |  |  |  |  |  | XC | | |
| 572 | VI IV E 144<br>BM |  |  |  |  |  |  | VC |  572 |  572a |
| 572a | VI IV E 530<br>T |  |  |  |  |  [1] |  | XR | | |
| 573 | VI IV F 26<br>Am |  |  |  |  |  |  | VC |  573 |  574 |
| 574 | VI IV F 145<br>BM |  |  |  |  |  |  [2] | AB | | |
| 574a | VI IV F 145a<br>T, M4304 |  |  |  |  |  [4] |  | S |  574a |  575 |
| 575 | VI IV F 146<br>BM |  |  |  |  |  |  [3] | AB | | |
| 576 | VI IV G 122<br>Am |  |  |  |  |  |  | C |  576 |  577 |
| 577 | VI IV G 123<br>Am |  |  |  |  |  |  [3] | N | | |

[1] This mark is drawn as seen but the lower part is incomplete. Possibly a minor variant of Type 571.

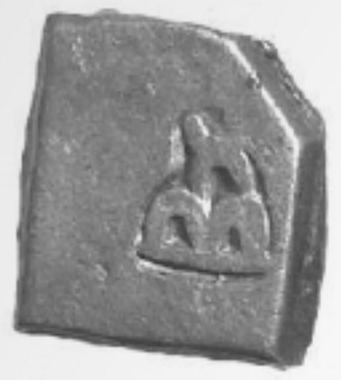
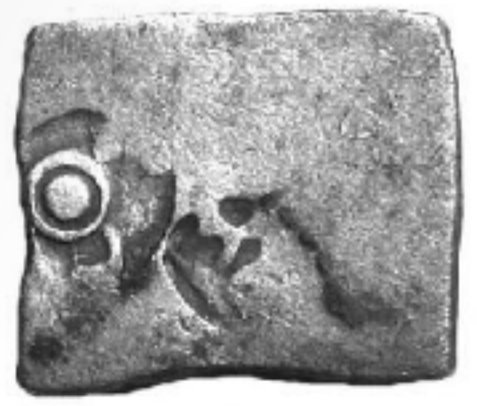
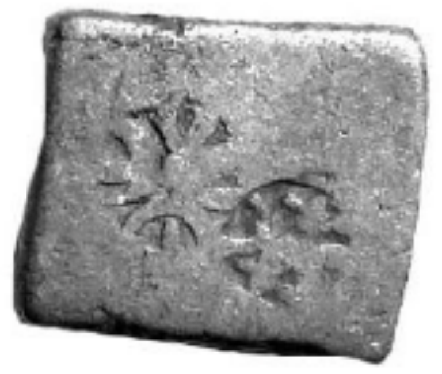
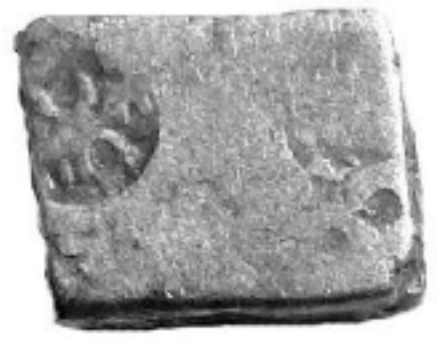
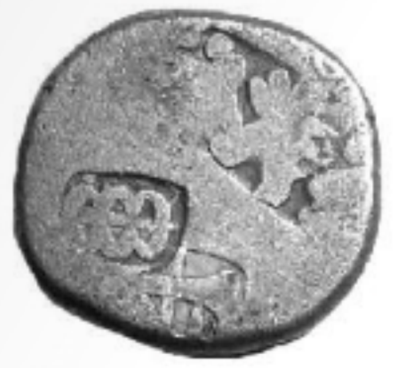
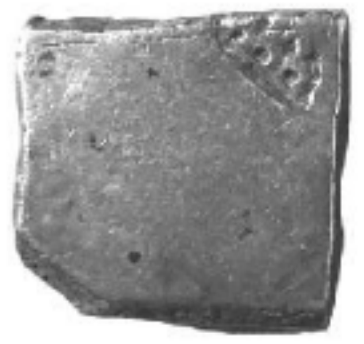
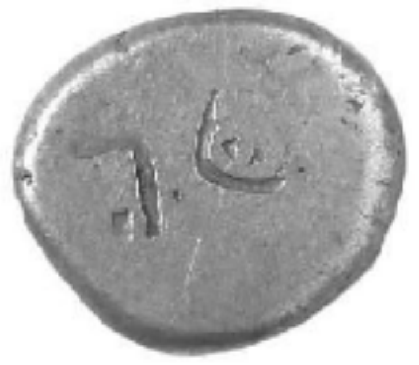
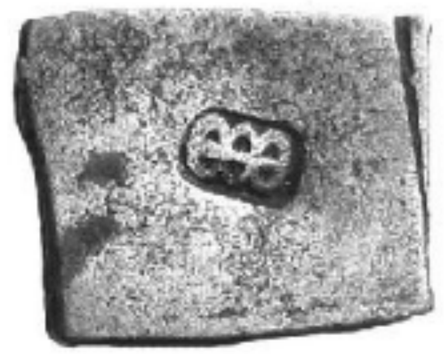
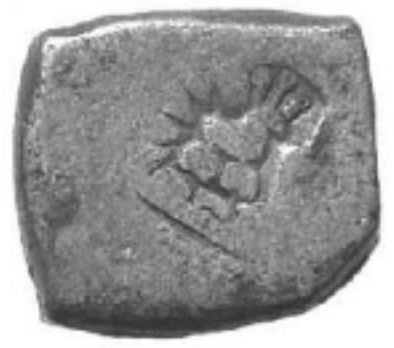
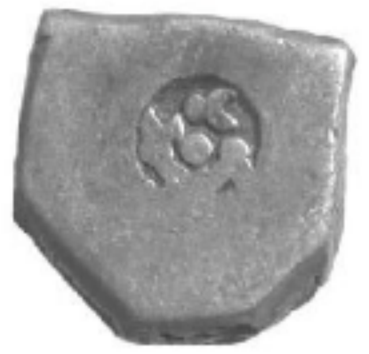
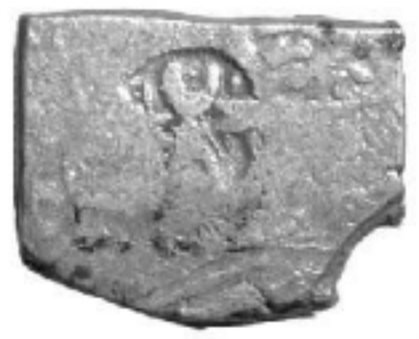
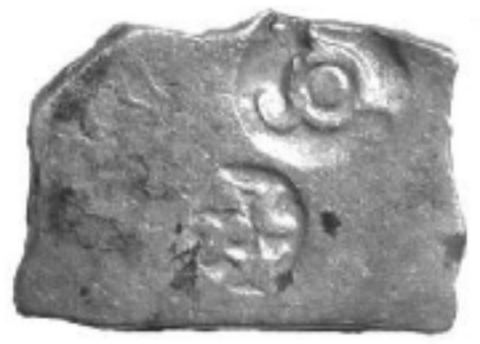
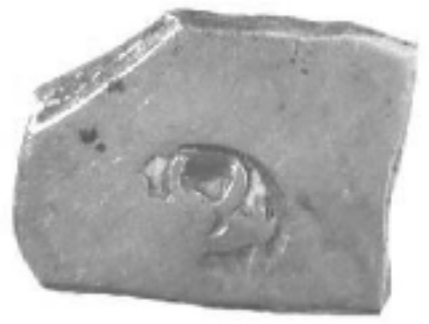
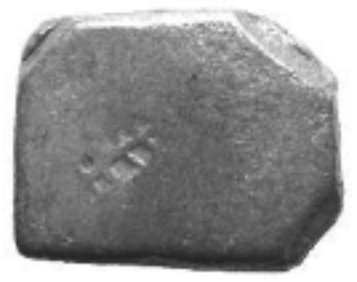
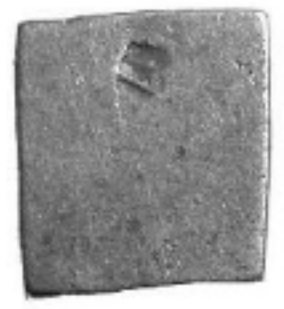
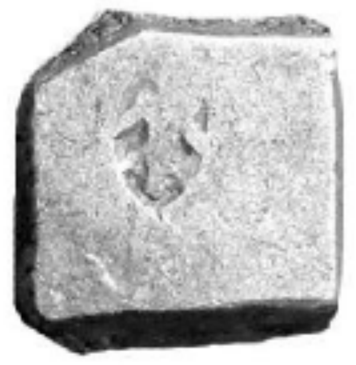
[2] Additional reverse mark often seen on this type  [3] Additional reverse marks often seen on this type  [4] A sixth mark on the obverse of type 574 is frequently seen. This mark may have been added at a later date but more likely it is contemporary with the main type.

## SERIES VIb Catalogue contd.

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS | | | | | REV. | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | | |
| 578 | VI IV G 124<br>Am |  |  |  |  |  |  | R |  578 |  579 |
| 579 | VI IV G 125<br>Am |  |  |  |  |  |  | S | | |
| 580 | VI IV G 126<br>Pr |  |  |  |  |  |  | VR | no image available<br>580 |  581 |
| 581 | VI IV G 127<br>Bah |  |  |  |  |  |  | VR | | |
| 582 | VI IV G 128<br>Pat |  |  |  |  |  |  | VC |  582 |  583 |
| 583 | [1] VI V A 161<br>Dikshit 1992 |  |  |  |  |  |  | VC | | |

[1] This type is known in fine silver (Dikshit 1992) but more commonly in base metal where it is listed as Type 612 in Series VIII.

## SERIES VIb reverses

| | | | |
|---|---|---|---|
|  |  |  |  |
| 542with the most common bold mark 374 | 542with a trisceles(mark 140) and an uncertain mark | 543 with a Taxila symbol (mark 473) and mark 477 | 546 witha Taxila symbol |
|  |  |  |  |
| 550 with marks 15, a standard, and three human figures (mark 469) as seen in Series VII | 552 with peacock on hill mark 265 | 557 with mark 15 and another uncertain mark | 566 with mark 15 |
|  |  |  |  |
| 568 with mark 265 | 572 with mark 14 | 573with mark 473 | 574 with marks 140 and 473 |
|  |  |  |  |
| 575 with mark 473 | 576 with tree in railing, mark 16 | 579 with mark 16, as usual poorly stamped | 582 with mark 16 |

## Series VII

This Series is remarkable in that the sun and six-armed symbols, sacrosanct from the very beginning of coinage in Series 0, suddenly vanish. Human figures are substituted in two of the three classes, and other new symbols in the third. Equally startling is the abandonment of the five mark system in Class II, which uses only three punches, but one of the punches embodies three human figures standing next to one another. In Class I these three figures are impressed from three separate punches; it is hard not to think that someone in the mint then had the 'bright idea' to combine these three humans into a single punch.

There is no obvious explanation for these abrupt changes. Kosambi (1965, 148) thought these coins were the issues of the free Indian cities mentioned by Megasthenes - cities which in post-Asokan time loosened their ties with the Mauryan monarchy as the central government began to weaken. Absence of sun and six arms would signify that the issuing city was no longer under the jurisdiction of the Mauryan ruler. Attractive though this theory is, it can be shown to be untenable. There are many examples of hoards where Series VII is present yet certain common coins of Series VI are missing. An example is presented in Appendix 5. Here, in a hoard of 300 coins, the common types 550, 566, 574 and 575 from Series VI were missing yet four types from Series VII were present. Moreover, the hoard contained 108 fresh examples of VI IV G 128 together with two fresh coins of the very rare VII I B 128, on which marks 16 and 128 bore close stylistic affinities, suggesting both types came from the same workshop within a limited timespan and were among the latest in the hoard (Fig. 42). Clearly in this situation a mint cannot have been working simultaneously for a free city (Series VII) and a Mauryan one (Series VI).

There is further proof that Series VI and VII were simultaneous issues. Each type in Series VII can be 'twinned' with a type in VI in which it has the fourth, fifth and reverse marks in common (Table 26). Such close ties imply that these issues were not only contemporary, but came from the same mint.

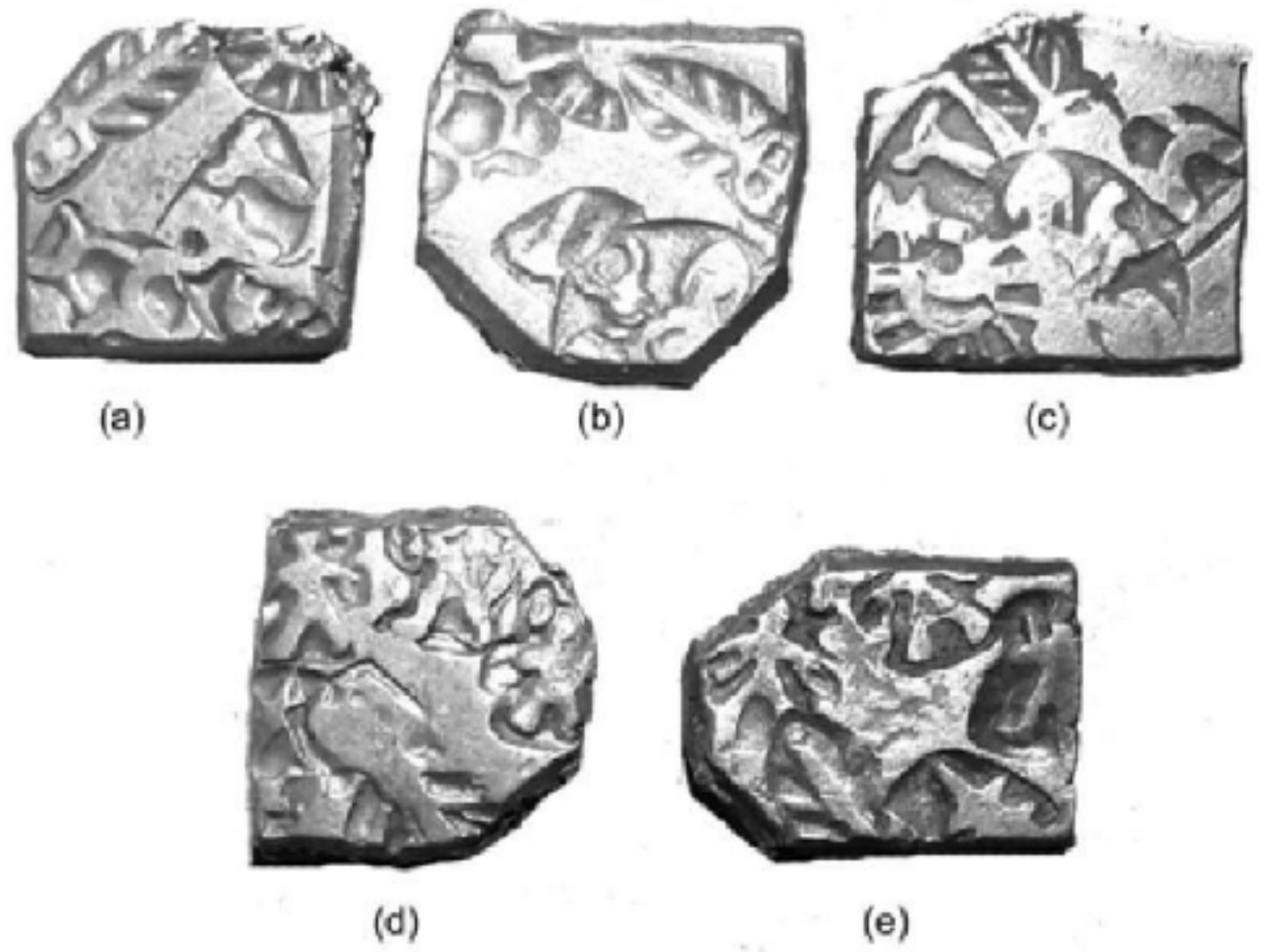

(a) (b) (c)
(d) (e)

Fig. 42: Examples from the Mauryan hoard described in Appendix 5 containing Series VIb Type 582 (a) – (c), and Series VII Type 585 (d) – (e). All the coins are in mint state and struck on small thick square flans with one or two corners cut off. They also share the common symbol no. 128.

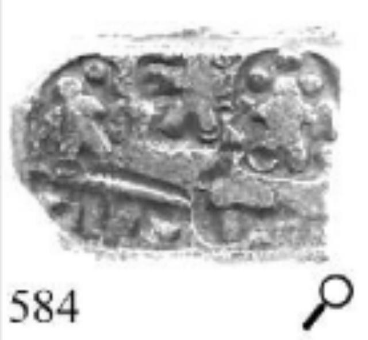
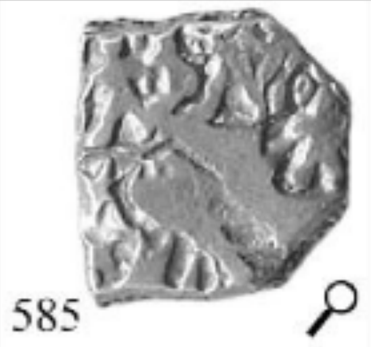
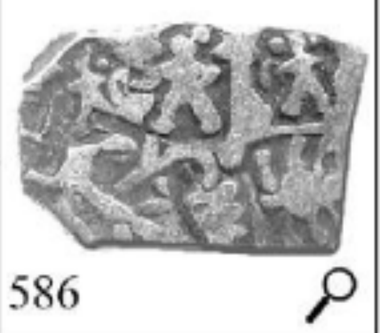
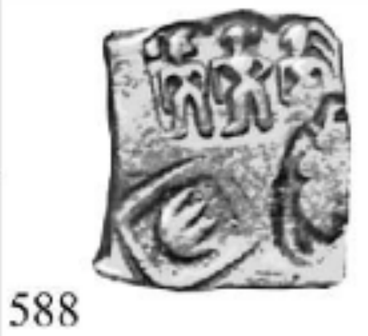
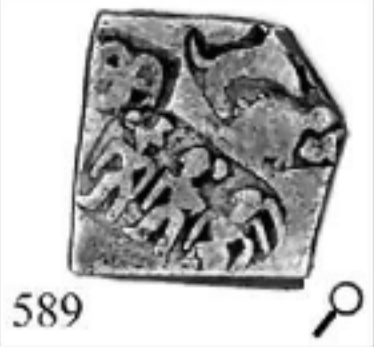
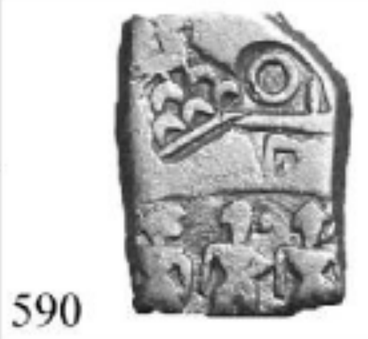
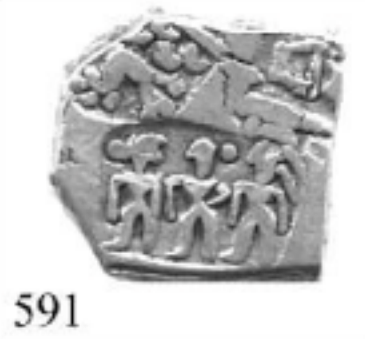
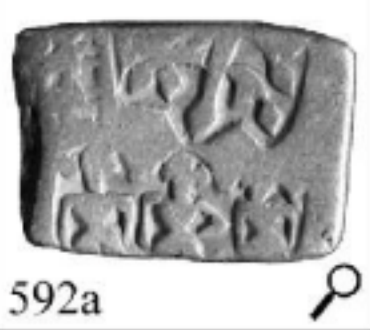
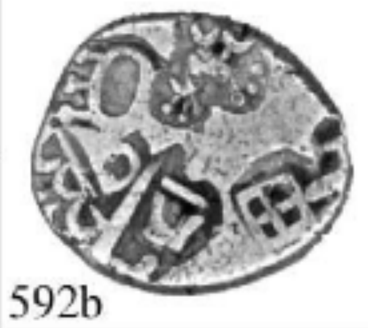
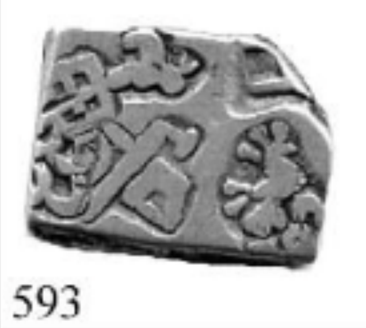
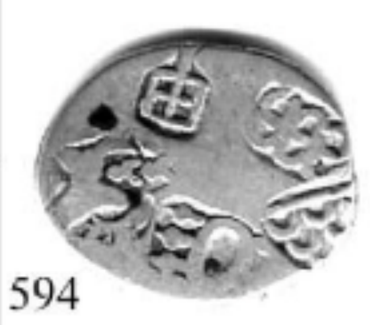
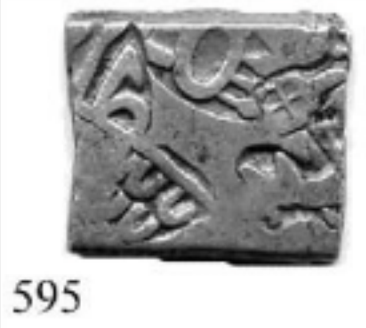
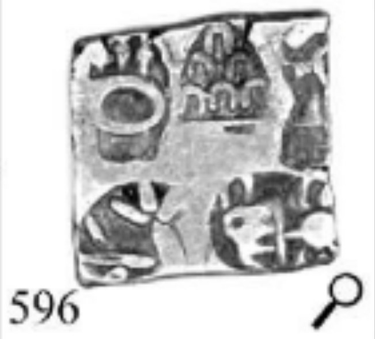
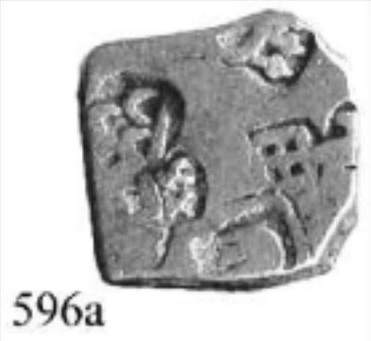
The Amaravati hoard of 7668 coins (Gupta 1963) contained all but three of the Series VII types but was missing some very common Series VI coins (Types 560-67 as a class, 572, 574, 575, 582, 583). Such abundant types as 574 and 566 could hardly have failed to find their way into these sizeable hoards had they been in circulation at this time. But some of these missing types are the very ones which tend to show marked stylistic degradation (566, 574-5); corroborative information of this kind suggests these are among the last types of the *karshapana* coinage, whereas Series VII occupies a space of time roughly two-thirds or three-quarters of the way through Series VI.

| Series VII | Twins with Series VI | Series VII | Twins with Series VI |
|---|---|---|---|
| 584 | 543 | 592 | 533 |
| 585 | 582 | 592a | 570 |
| 586 | 573 | 592b | 570 |
| 587 | 571 | 593 | 570 |
| 588 | 571 | 594 | 550 |
| 589 | 550 | 595 | 543 |
| 590 | 568 | 596 | 573 |
| 591 | 570 | | |

Table 26: Twinning of Series VII with types in Series VI. Each pair shares 4th, 5th and reverse marks

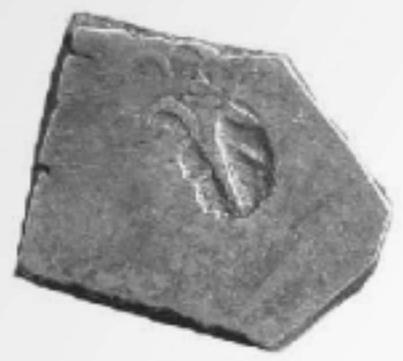
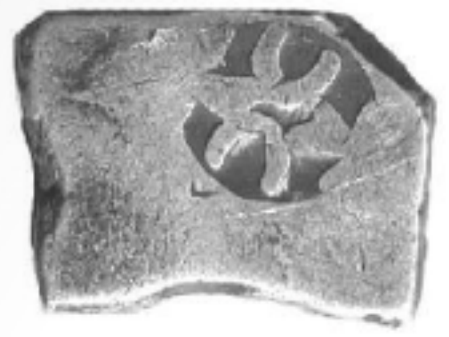
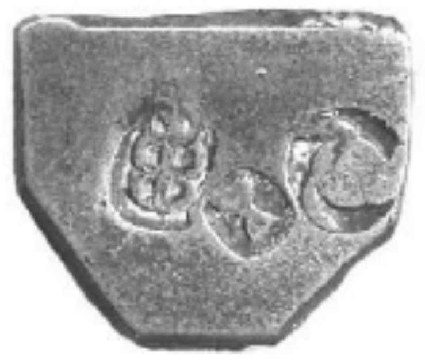
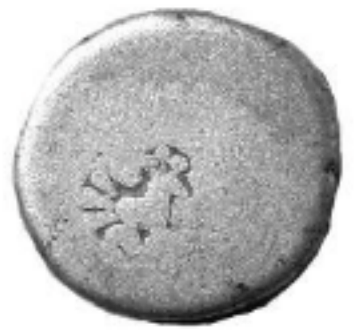
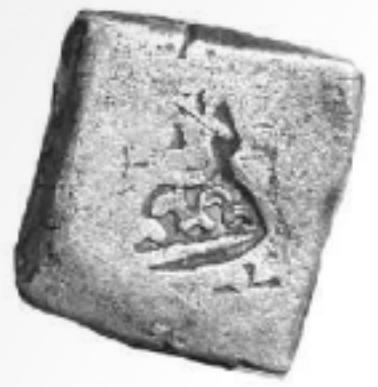
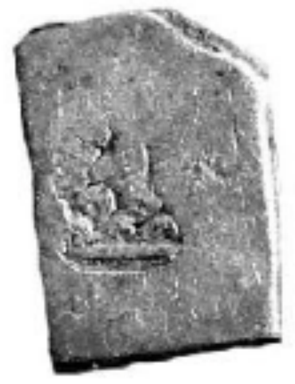
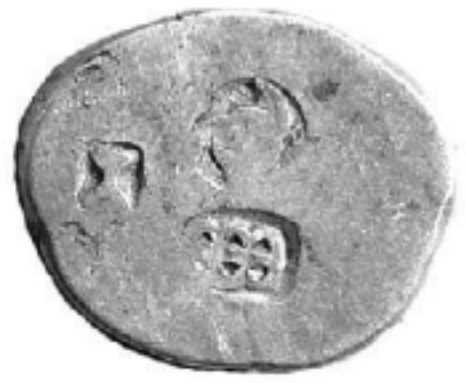
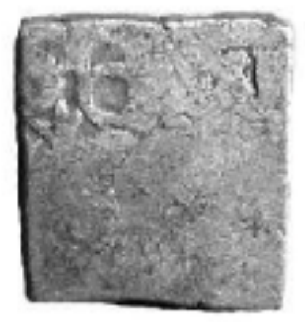
The introduction of the three human figures on these coins is still a mystery. Previously they had cropped up singly in various poses in Series V and VI, or rarely as two together. There is a strong suspicion that the figures are likely to be deities rather than mortals (Murphy 2003-4).

## SERIES VII Catalogue

| TYPE | CLASSIF-ICATION & REFERENCE | OBVERSE MARKS 1 | 2 | 3 | 4 | 5 | REV. | RARITY | PHOTOGRAPHS | |
|---|---|---|---|---|---|---|---|---|---|---|
| 584 | VII I A 18<br>Am | | | | | | | R |  584 |  585 |
| 585 | VII I B 128<br>Am | | | | | | | VR | | |
| 586 | VII I C 26<br>BM | | | | | | | N |  586 | no image available |
| 587 | VII I D 27<br>R5 | | | | | | | R | | |
| 588 | VII II A 27<br>Am | Three figures from the same punch | | | | | | R |  588 |  589 |
| 589 | VII II B 23<br>Am | | | | | | [1] | C | | |
| 590 | VII II C 24<br>Am | | | | | | | VR |  590 |  591 |
| 591 | VII II C 25<br>Am | | | | | | | XC | | |
| 592 | VII II D 22<br>R5 | | | | | | ? | XR | no image available |  592a |
| 592a | VII II D 528<br>BB | | | | | | ? | XR | | |
| 592b | VII III A 24<br>RT | | | | | | | XR |  592b |  593 |
| 593 | VII III A 25<br>Am | | | | | | | S | | |
| 594 | VII III B 23<br>Am | | | | | | [1] | N |  594 |  595 |
| 595 | VII III C 18<br>Am | | | | | | [1] | C | | |
| 596 | VII III D 26<br>Am | | | | | | | R |  596 |  596a |
| 596a | VII III E 27<br>T; Bw | | | | | | | VR | | |

[1] Additional reverse marks often seen on these types include

## SERIES VII reverses

| | | | |
|---|---|---|---|
|  |  |  |  |
| 585 with mark 16 | 586 with mark 473 Taxila symbol | 589 with marks 15, 140 and 476 | 590 with mark 265 |
|  |  |  |  |
| 591 with mark 265 | 593 with mark 265 | 594 with marks 15, 140 and 476 | 595 with mark 473 |

# Series VIII

Series VIII comprises the post-Imperial coinages which still retain the punchmarking technique (in design if not in method of manufacture) and to some extent imitate the Mauryan *karshapana* size and format, either in weight range or symbology, or both. Excluded are inscribed punchmarked coins from Malwa (e.g. Mitchiner 2005, 4732) and extra-large coins such as those from Eran (BMCAI pp 101-116). The assumption is that Series VIII are the issues of local political entities which had broken away from the Mauryan yoke, but still desired to imitate the Mauryan style of coinage. It is not always easy to separate Late Mauryan from post-Mauryan. The ancient texts describe the Sunga dynasty as the successor to the Mauryans; we are told they established a capital in Malwa, but the full extent of their domain is not known and would almost certainly have been fluid in the late second century BC. Apart from the coins found in this region, it is difficult to ascribe any coins of Series VIII to any particular ancient political entity.

Mauryan silver coins of good metal do not occur in hoards comprising debased silver and copper punchmarked coins, except for the group here classed as Mauryan forgeries (see under 'Wayward Coins' W9-W16, pages 68-69). This then represents the fourth and final 'economic break-point' in the punchmarked coinages covered in this Catalogue (the others being at the end of Series 0, Series I Phase 1, and Series I Phase 5). But whereas the earlier ones simply involved replacement of one silver coinage with another, the present case is far more catastrophic – silver coin vanishes altogether and is replaced with base metal.

This event happened quickly - there is very little transitional coinage. The stable Mauryan *karshapana* was replaced by a bewildering variety of different coin types many of which seem, from the findspots, to have had only quite local circulation. These coins are often small in size and badly produced from poorly cut punches, creating a field-day for spotters of murky variants but a nightmare for formal classification. Many cannot be placed in an orderly classification because they were not issued in an orderly way. In these times, the loose control from central authority was manifest in its inability to organise a replacement for the familiar silver *karshapana*. This would have forced traders to make up the deficit by manufacturing their own imitations in whatever base metal was to hand, giving rise to a token coinage. In fact the line between 'official' and 'unofficial' is just not clear in many cases. The number of variants detectable in these coins depends on how many hoards one has to hand and how large a magnifying glass one is using: the Catalogue merely provides a sampling. A parallel may be seen in the degraded copies of Roman bronze coins issued towards the termination of the Roman occupation of Britain.

All this is testimony to the breakdown of economic infrastructure being experienced by society at this time. Here the numismatic record plays a significant role in understanding the nature of the collapse of Imperial authority; indeed it could be argued it is the *only* primary evidence chronicling the economic decline in this era.

The following criteria are used to separate the coinage of Series VIII from other Series.

1. Metal is normally base silver or copper alloys.
2. Weight not to a rigid standard, sometimes well below *karshapana* standard. Excluded are coins belonging to higher weight standards. Even though these may be punchmarked, (e.g. the Eran coins) they are not imitating the *karshapana*.
3. Adoption of Mauryan types and symbols, often inaccurately copied.
4. Variable numbers of marks.
5. Marks often in fixed positions on the flan.
6. Punchmarking technique slides into diestruck methods.
7. A tendency to move from universality of circulation to regionalisation.

Certain Mauryan prototypes seem to be adopted preferentially, and they hint at localised areas of output. In these cases it can be difficult to draw the line between poorly struck or slightly debased examples which remain within the Imperial remit, and those whose further degeneration points to a local issue. The choice of symbols on these coinages - Mauryan or non-Mauryan - provides an interesting commentary on what breakaway states were thinking. When your former masters are losing control, how long do you cling to the sinking ship?

The punchmarking technique slowly died out because of the new methods of coin production which were filtering through from the Indo-Greeks, who used dies not punches. That provides a rough time-check for the Series: the introduction of diestruck coins into northern India via the Indo-Greek invasions can be fairly well dated to around 200 BC, and a brief occupation of part of the Gangetic plains under Menander followed from about 175/170 BC. At the other end of the timescale, there is a further problem in establishing the point when 'Series VIII' should end. It may have taken time for the diestriking technique to reach to the rest of the sub-continent, but by the end of the first century BC most coins are diestruck. (The punchmarking technique re-awakened in the eleventh century AD amongst the Chalukyas and Yadavas of the western Deccan who issued gold coins (Fig. 43)). There are no known genuine gold punchmarked coins of the ancient period.

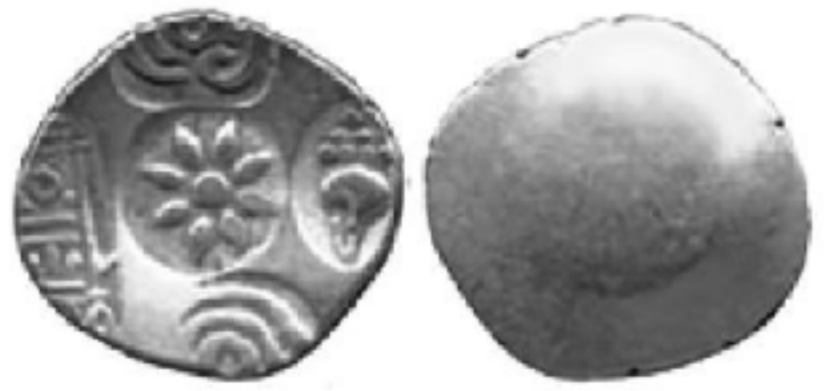


Fig. 43: Example of a gold punchmarked coin of Chalukya Ramachandra Yadava, Maharashtra region, AD 1270-1311. Not to be confused with ancient punchmarked coins!

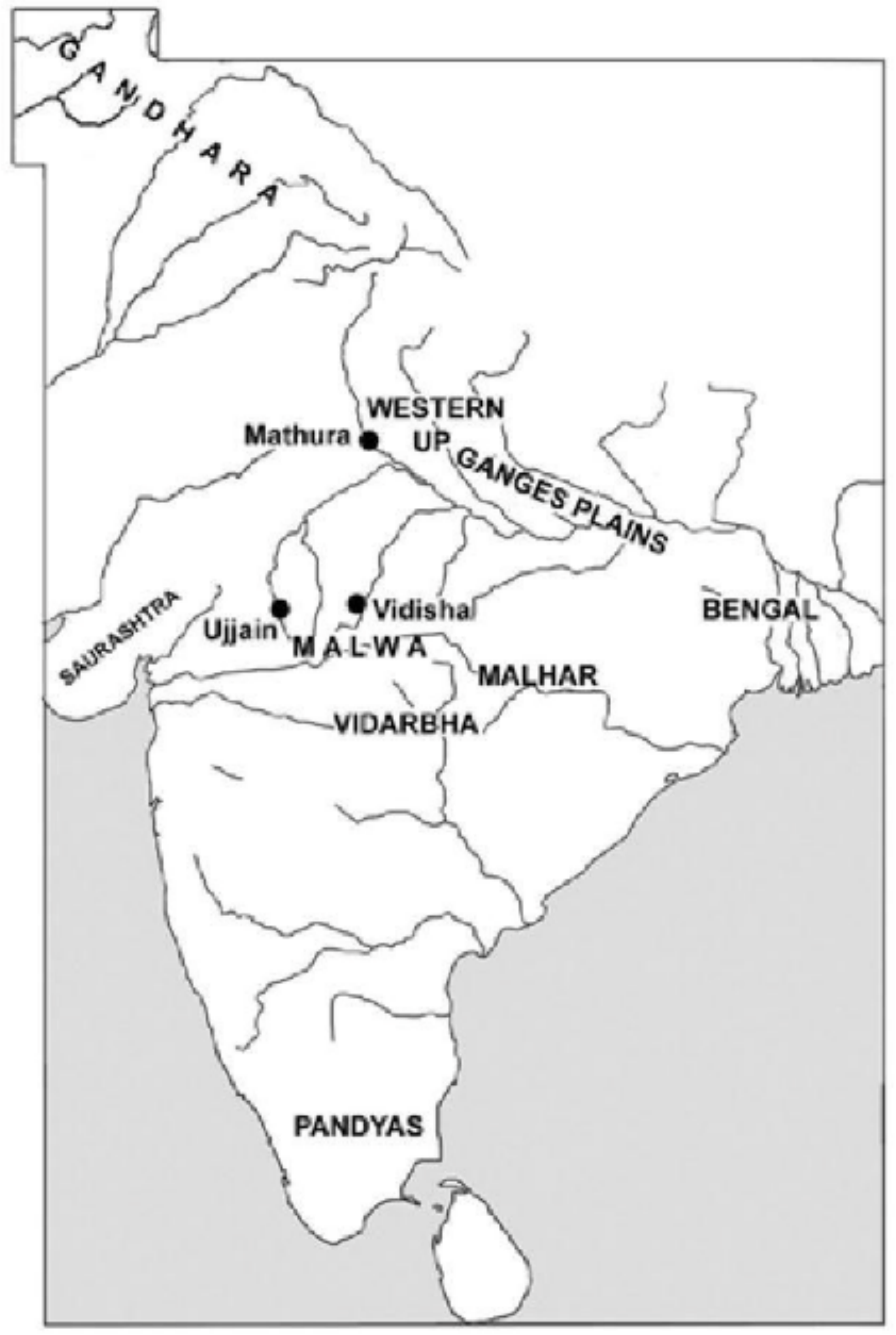
The survival of Mauryan silver into the early centuries AD, predominantly in the south of India, is discussed in the section on 'Debasement and Termination of the *karshapana* coinage'.

There is a potential for confusion between the contemporary forgeries certainly produced in Imperial time, and the post-Mauryan terminal punchmarked coinages some of which may resemble forgeries because of their debased appearance or non-standard symbology. The main text above (under 'Contemporary Forgeries') has included those believed to be counterfeits, but there cannot be absolute certainty in all cases.

Whereas the Imperial *karshapanas* are classified by type, because the findspots rarely give evidence for local issues, the Catalogue of Series VIII arranges the majority of coins by region. There are nine regional groups of coinage attributed to this period, (Map 6) plus a range of coins that cannot be attributed to any region:

1. The northwest including Gandhara
2. 'Mathura Hoard' type
3. Western UP (Kanauj)
4. Ganga plains
5. Vidarbha region
6. Ujjain, and Malwa
7. Malhar
8. Bengal region
9. Pandyas
10. Unattributed coins

The photography of some of the coins in this Series presents a challenge owing to their frequent small size, dark colour and corroded, blurred marks. There is no substitute for the coins themselves, but enlargements of selected coins are provided in the Enlarged Photo section at the end of the Catalogue. Rarity of coins in this Series has not been fully researched; it varies from single-find specimens (Kanauj) to the super-abundant types of the Ujjain-Vidisha area.

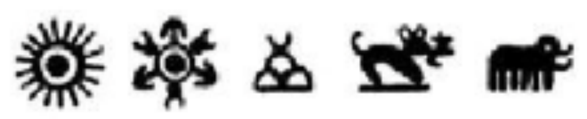
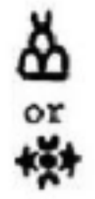
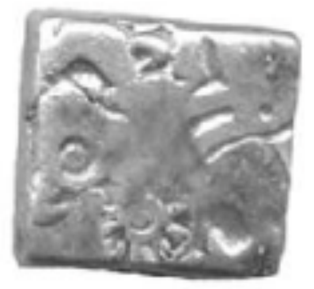
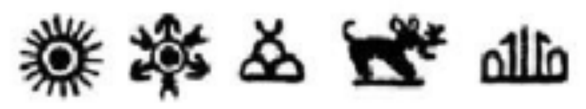
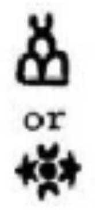
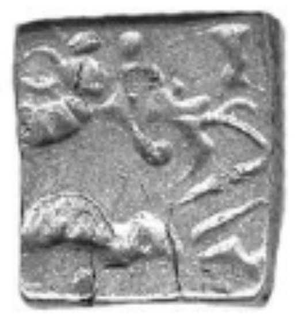


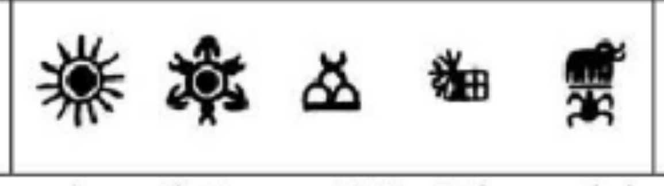
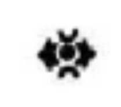
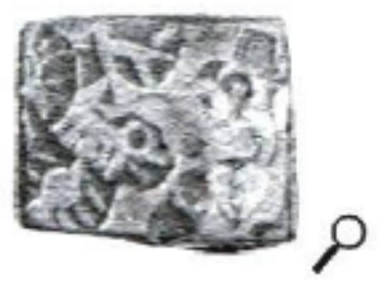
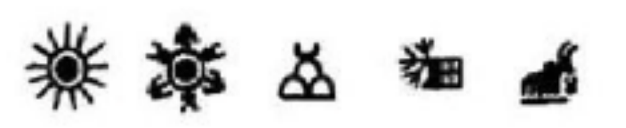
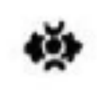
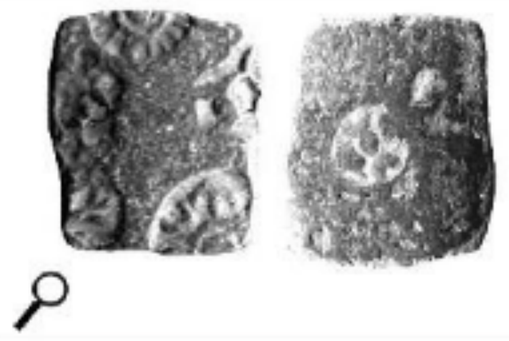
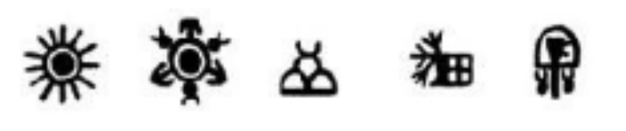
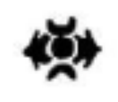
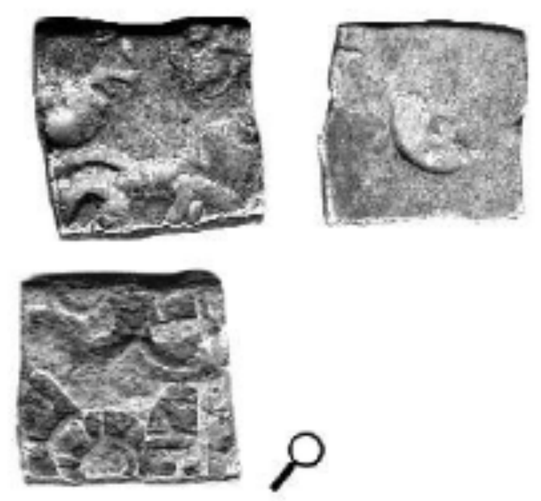
Map 6: Map of Series VIII localities

## Series VIII Catalogue

### Northwest region including Gandhara

Coins in base metal most often imitating Types 573, 574 and 575 have been found in large numbers from Haryana to Afghanistan. Other Series VI types are also seen (Gupta 1951).

| Type No | GH prototype | Metal | Av size mm | Symbols Obv | Rev | Photos |
|---|---|---|---|---|---|---|
| 597 | 542 | Base AR or AE | 15 |  |  |  |
| Ref: Trade. Coins this group are quite common. | | | | | | |
| 598 | 543 | Base AR or AE | 15 |  |  |  |
| Ref: Trade. | | | | | | |

| Type No | GH prototype | Metal | Av size mm | Symbols Obv | Rev | Photos |
|---|---|---|---|---|---|---|
| 599 | 573 | Base AR, AE | 15 |  |  |  |
| Ref: Trade. It is difficult to separate genuine coins of Types 573-5 from debased examples but when silver content is undetectable they are assumed to be post-Mauryan. | | | | | | |
| 600 | 574 | base AR, AE | 16 |  |  |  |
| Ref: A. Additional marks seen on these coins are listed in the main Catalogue. This type is found widely in northern India; its place of mintage is unknown. Photo shows AE example. | | | | | | |
| 601 | 575 | base AR, AE | 13 |  |  |  |
| Ref: A & trade. Upper coin shows base silver with very degraded marks; lower photo shows AE. | | | | | | |

## Coins of the 'Mathura' Hoard type

This hoard was published by Murphy (2003-4). The coins are brassy and the reverse marks do not occur on regular Mauryan coins, suggesting they may belong to the post-Mauryan period. Mitchiner (2004, 1356) has suggested from their unworn and uncorroded condition that they might be 'modern fantasies'. However it would take a forger with a very intimate knowledge of Mauryan coinage to bring together the marks used in this collection, and from the published examples, most marks are only slightly different in style from the prototypes they imitate, although there are several completely new marks here. It can be taken as reasonably certain that they are not modern forgeries, and the obviously non-silver content of many suggests that even when new they would not have passed as silver coins. Thus they may best be interpreted as the product of a breakaway post-Mauryan region whose location might be Mathura, issued at a time when silver was hard to obtain. Murphy states that his hoard was viewed in Delhi but was said to come from the Mathura region, and that there were about 400 coins in the hoard. Weights vary from 3.21 to 3.38 grams.

Murphy drew the 'sun' on the reverse with a central pellet, although it is absent on most coins here. It actually looks more like a flower; this mark is occasionally seen on other base silver or bronze coins imitating *karshapana* obverse types, including those from the Mahasthan site in Bangladesh (Boussac & Alam 2005). As mentioned in the main text, it is possible that all coins with this flower symbol on the reverse should belong to a single group. A plant symbol similar to Mark 5 recurs on the copper coinages of Mathura.

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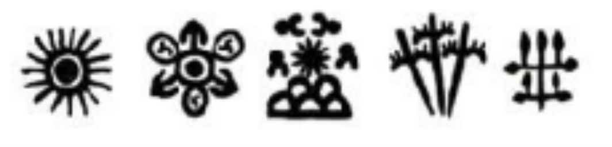
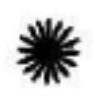
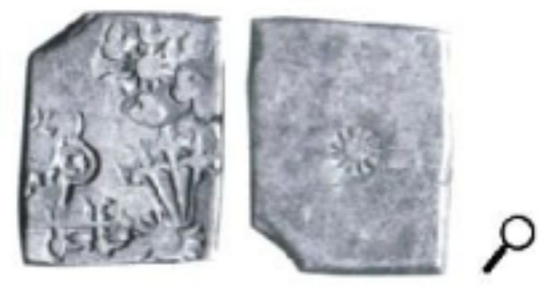
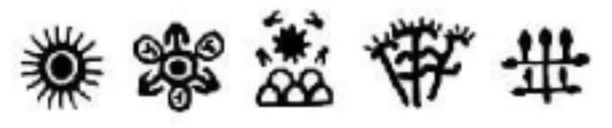
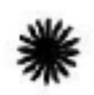
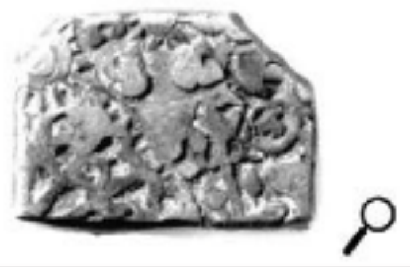
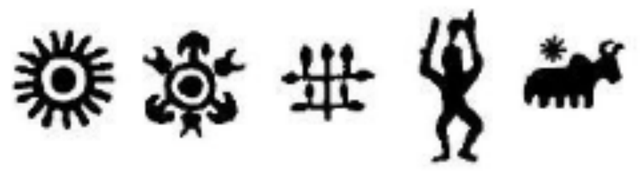
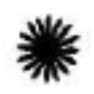
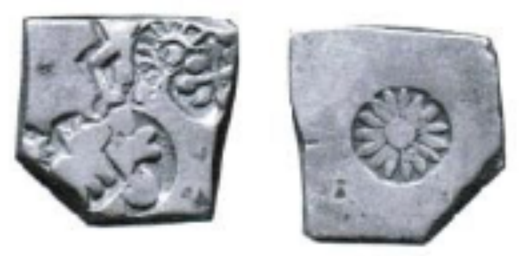
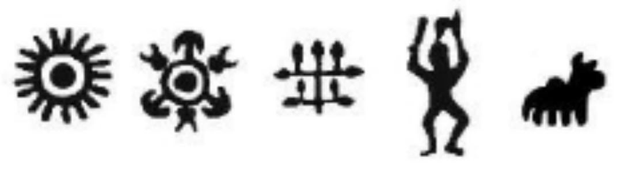
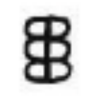
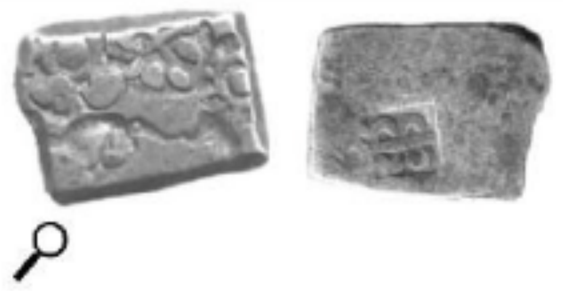
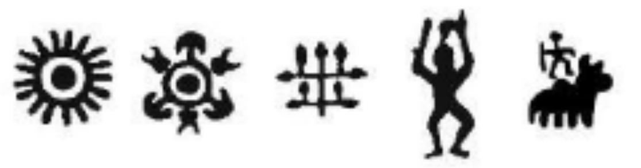
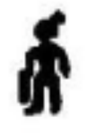
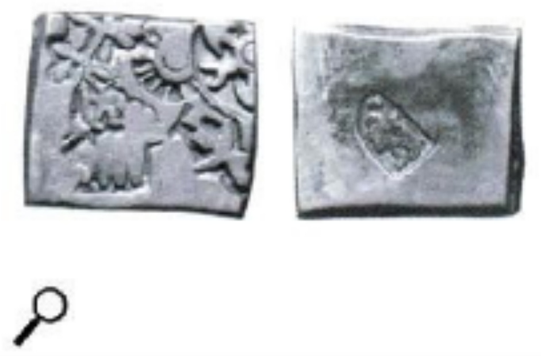
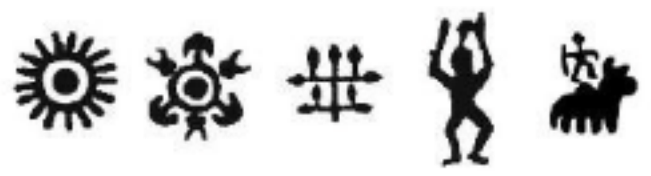
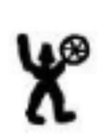
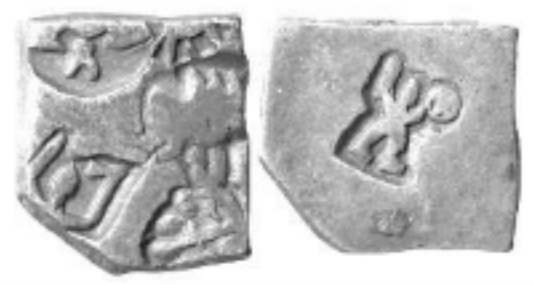
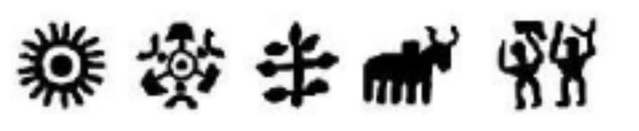
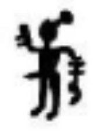
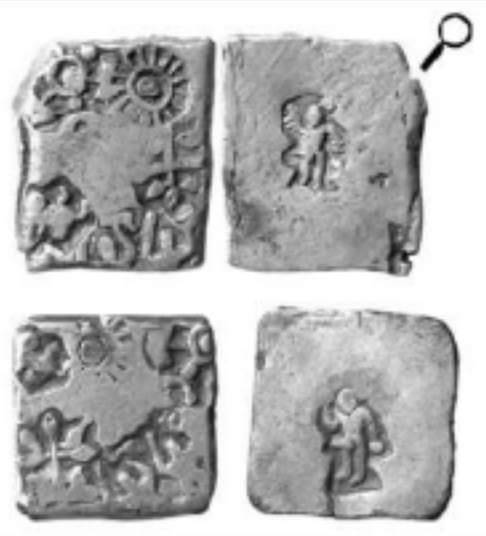
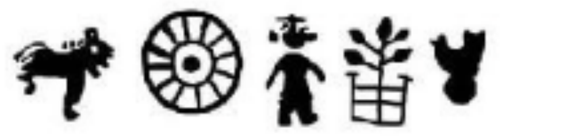
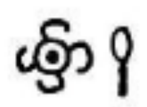
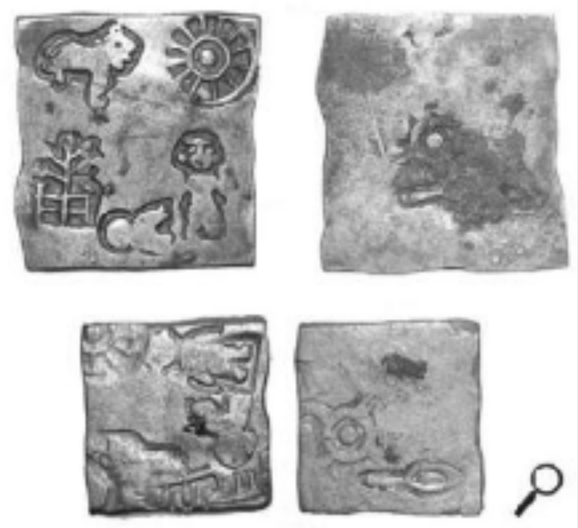
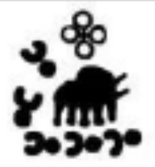
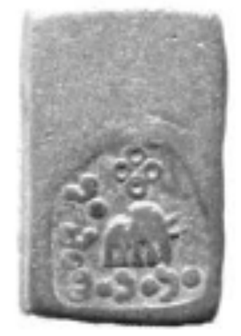
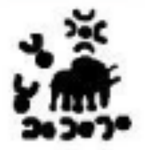
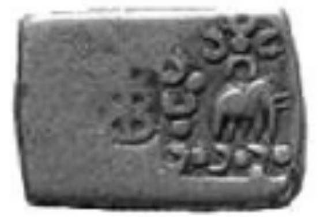
| Type No | GH prototype | Metal | Av size mm | Symbols Obv | Rev | Photos |
|---|---|---|---|---|---|---|
| 602 | 476 | Brass or base AR | 17 |  |  |  |
| Ref: Mitchiner 2005, 5825. This type is a close variant of Type 476 but with a different 'cactus' plant. This example comes from the Guenca collection. Very rare. | | | | | | |
| 603 | 476 | Brass or base AR | 16 |  |  |  |
| Ref: Murphy 2003-4, 1. This may be the same type as 602. | | | | | | |
| 604 | 497 | Brass or base AR | 15 |  |  |  |
| Ref: Murphy 2003-4, 2. The size of the reverse symbol varies. A variety with fish above the bull has also been noted (Trade). 604-607 appear occasionally in the market. | | | | | | |
| 605 | 497 | Brass or base AR | 15 |  |  |  |
| Ref: Murphy 2003-4, 6, but the human figure and bull need verification. | | | | | | |
| 606 | 497 | Brass or base AR | 17 |  |  |  |
| Ref: Murphy 2003-4, 4, 5, &7. Minor variants in the reverse human figure have been noted. | | | | | | |
| 607 | 497 | Brass or base AR | 14 |  |  |  |
| Ref: JL. Variety with reverse man holding missile discus. | | | | | | |
| 608 | none | Base AR | 17 |  |  |  |
| Ref: JL; Murphy 2003-4, 8. There are two examples of this type which show minor variations in the symbols. Only the forepart of the bull is visible. The type displays strange iconography. While some symbols such as the bull or the human figure on the reverse are drawn with unusual realism, the sun and tree are sloppily cut. The six-armed symbol is a very eccentric version of the standard Mauryan form. Probably all the human figures featured are intended as deities. | | | | | | |

## Western UP (Ahichhatra area?)

| | | | | | | |
|---|---|---|---|---|---|---|
| 609 | None | base AR | 16-20 |  |  |  |
| Ref: LD. These remarkable coins from UP, seen in Kanpur amongst coins of Series III and IV, appear to be authentic yet they showstylistic differences from Mauryan prototypes both insubject and execution. Thewheel, taurine and the tree-in-railing borrow from Mauryan subjects but the realistic lion, with mane, paws, tail and ear is unprecedented. The coins probably belong to a short-lived local breakaway group. Mitchiner (2005, p.1072) mentions finds from Bihar. | | | | | | |

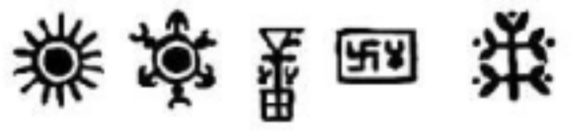
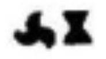
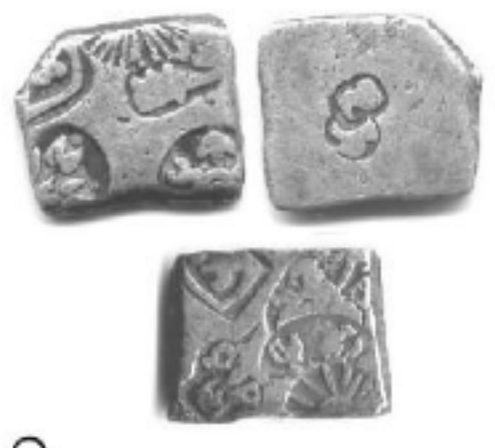
## Eastern Ganga plains

Coins with these countermarks have occurred in finds from Sugh in Haryana (Chopra 1973, Nanda & Lalman 1985-6) as well as the region around Kaushambi.

| | | | | | |
|---|---|---|---|---|---|
| 610 | None | AR | 18 |  |  |
| Ref: Trade. This countermark containing elephant, taurines and the 'Ujjain symbol' is seen struck on the reverses of Type 566. Such coins may be regarded as hybrids originating in Series VI but countermarked later as indicated by the Ujjain symbol that is frequently used in post-Mauryan time. Common. | | | | | |
| 611 | None | AR | 18 |  |  |
| Ref: Trade. The mark is the same as on Type 610 apart from the symbol above the elephant. Less common. | | | | | |

## Vidarbha region

Coins of a type known as the Mangrul type, have been found widely in the territory ascribed to ancient Vidarbha. Mangrul is located SE of Nagpur. Other finds have been located at Mana, (Kothalkar 1992),Newari (Dikshit1964), Kaudinaypura (Dikshit 1968) and Adegaon (Meshram 2006). The type has appeared in trade and may have had a wider circulation. There appears to be only one variety, but Dikshit described fine silver coins, perhaps of earlier date. Kothalkar records a coin of Type 566 amongst the hoard from Manu in Akola District. Shastri (1993) thought the base coins were contemporary forgeries.

| | | | | | | |
|---|---|---|---|---|---|---|
| 612 | (also 583) | base AR | 16 |  |  |  |
| Ref: BMC 2 XI c, Prasad 1934 38A1, Gupta & Jain 1957, Dikshit 1964, Kothalkar 1992, Shastri 1993. Two examples are shown of the obverse and one of the reverse. This type was formerly Type 583 in Series VIb. Common type. Type 583 is retained for examples in fine silver. | | | | | | |

## Ujjain, Vidisha and Malwa, region of Sunga control

This region issued an abundant post-Mauryan coinage based on Type 566. That the first four coins in this section were still being issued in the early first century BC, appears to be shown from their presence in a hoard which also contained a Ujjain copper coin (Hardaker 1974), a similar example of which is overstruck on one of Apollodotus II (*c.* 80-65BC) from Saurashtra (Errington 2003). By that time the Sunga dynasty was probably near the end of its line, so the coinage that spans the gap between the end of Mauryan rule and this point in time may well have been more of the same, which would help to account for the super-abundance of these types. Alternatively, it is just possible that the hoard described by the present author in 1974 may have been contaminated by Ujjain coins that were from a different hoard, although they were in the same lot. If this were the case, the imitations of 566 would date to the mid- second century BC in line with the breakup of imperial power in Northern India. Variants on the 566 type in base metal in this group are not confined to the Ujjain-Vidisha region. Similar ones are reported from Saurashtra in Gujarat (Rajgor 1990).

There is a vast coinage of copper punchmarked coins attributed to Ujjain, from where they are most commonly obtained, but their symbology is more 'local' than Mauryan. Nevertheless Mauryan symbols are frequently mixed with the local iconography, and occasionally a combination of marks comes close to a Mauryan prototype. Such coins are not catalogued here, but an example is shown in Fig. 44. Mitchiner (2004) 4702 also shows a coin in this series.

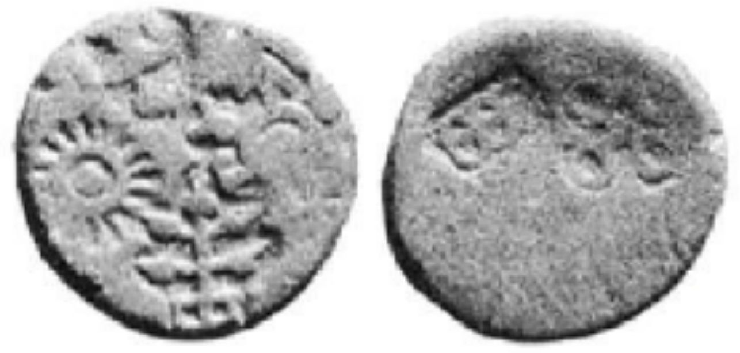
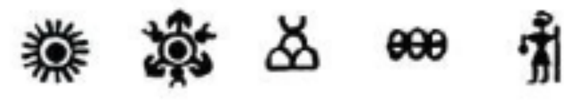
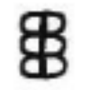
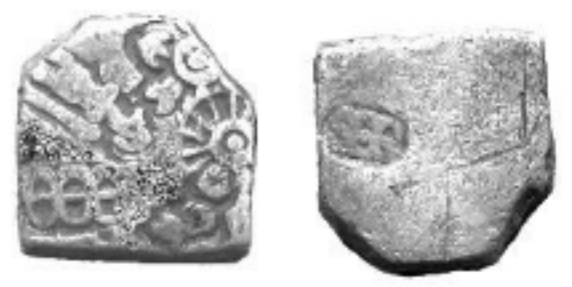
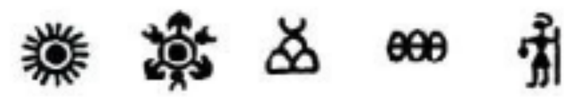
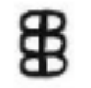
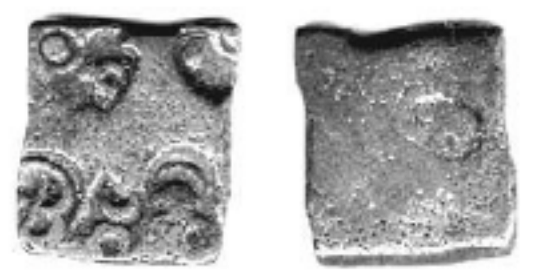
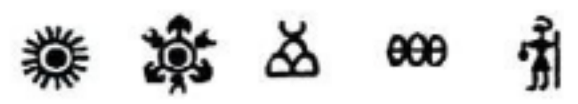
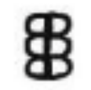
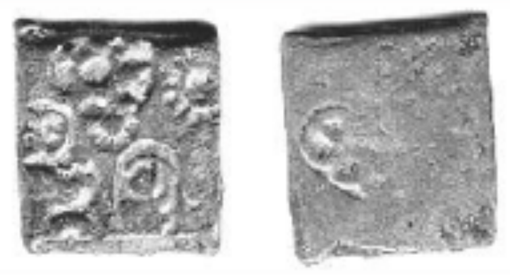
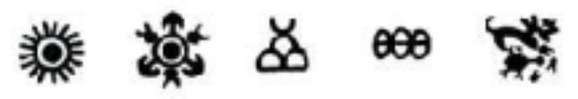
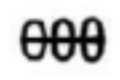
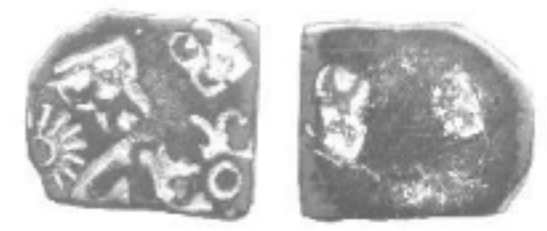
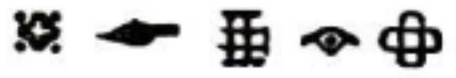
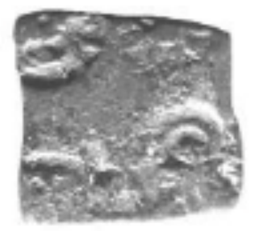
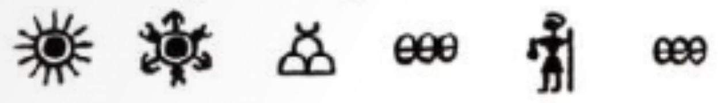
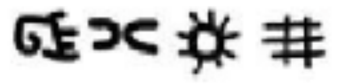
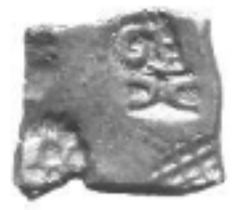
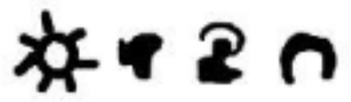
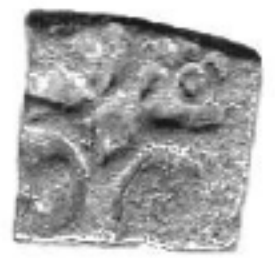
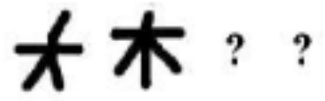
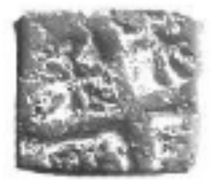
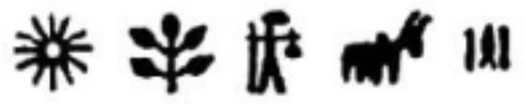
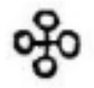
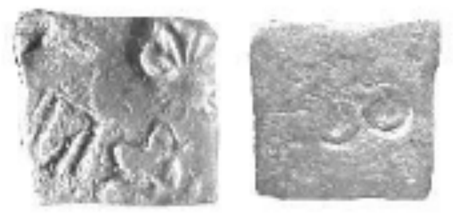
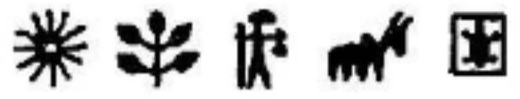
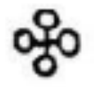
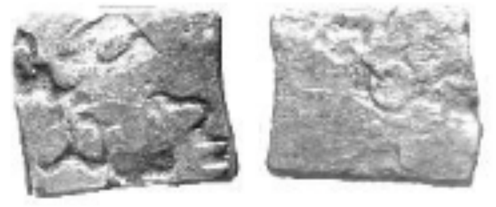
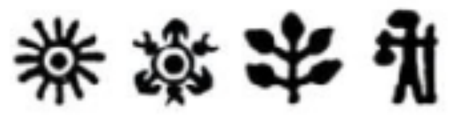
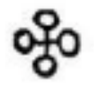
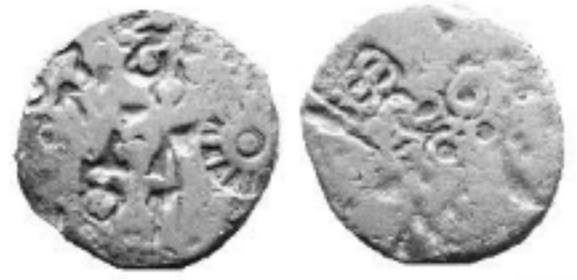
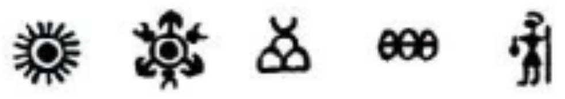
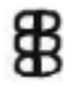
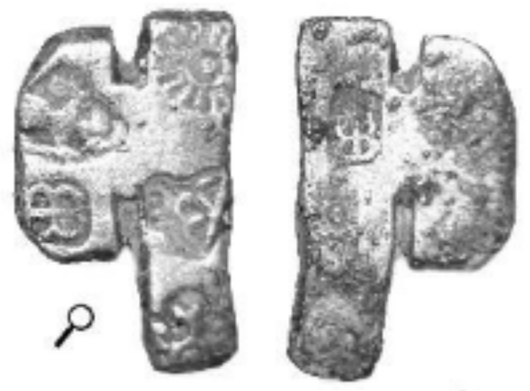
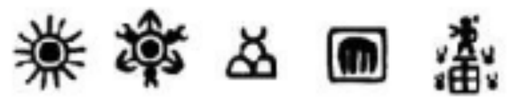
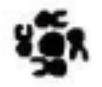
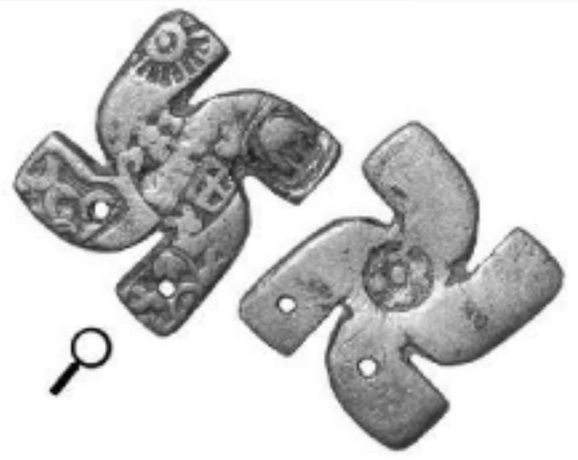


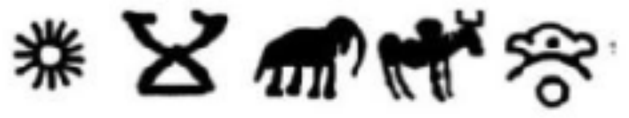
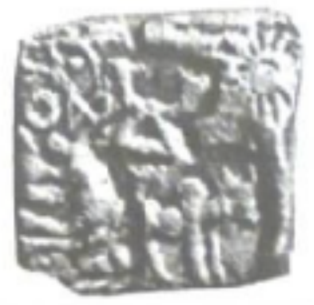
Fig. 44: Typical Ujjain copper coin with Mauryan symbols (Smith 1906, Pl XIX, 11), x 1.5

| | | | | | | |
|---|---|---|---|---|---|---|
| 613 | 566 | base AR, AE | 18 |  |  |  |
| Ref: NC 1974. The most extensive post-Mauryan punchmarked coinage, ranging from competent imitations with five obverse marks in base silver to small coppers with barely recognisable symbols. Position of the symbols varies. | | | | | | |
| 614 | 566 | base AR, AE | 11-14 |  |  |  |
| Ref: NC 1974. Same type but the symbols are in fixed positions but still individually struck. Abundant. | | | | | | |
| 615 | 566 | AE | 11 -14 |  |  |  |
| Ref: NC 1974. Same type but central star mark. | | | | | | |
| 616 | 550 | AE | 15 |  |  |  |
| Ref: NC 1974. The front part of the dog symbol is off flan so the presence of a tortoise is unverified. Copper imitations of various Mauryan types are common. | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 617 | 566 | AE | 11 |  | |  |
| Ref: NC 1974. Similar but degraded symbols. Numerous other symbols seen on these coins include  | | | | | | |
| 618 | None | AE | 8-11 |  | |  |
| Ref: A. Four (occasionally five) symbols derived from 566 but not closely copying any one symbol. Many variants exist: see enlarged photos section. Very common. | | | | | | |
| 619 | None | AE | 14 |  | |  |
| Ref: A. Four symbols derived from 566 arranged to make a cruciform shape between them with star in the centre. Common. | | | | | | |
| 620 | None | AE or brass | 9 |  | |  |
| Ref: A. Degraded copy of 618. | | | | | | |
| 621 | None | AE or brass | 12 |  |  |  |
| Ref: NC 1974. Not all symbols clear on any one coin. Note Ujjain symbol on reverse. Also recorded from Ujjain by Kothari & Morrison (1987-9). Scarce. | | | | | | |
| 622 | None | AE or brass | 12 |  |  |  |
| Ref: NC 1974. Ujjain symbol on reverse. | | | | | | |
| 623 | None | AE | 16 |  |  |  |
| Ref: BA. There is no trace of the three circles bisected by a line on the obverse of this coin. | | | | | | |
| 624 | 566 | base AR | ? |  |  |  |
| Ref: T. Provenance unknown but this and the following coin appear to be genuine pieces. Unique. | | | | | | |
| 625 | 572 | base AR | ? |  |  |  |
| Ref: T. This piece has been pierced as if for suspension. The shapes are 'battleaxe' and 'swastika'; an animal shape is also reported. They appear to be ritualistic items of late Mauryan date. Unique. | | | | | | |

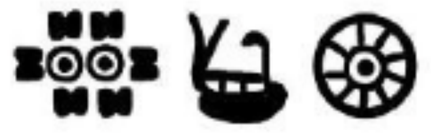
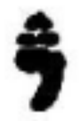
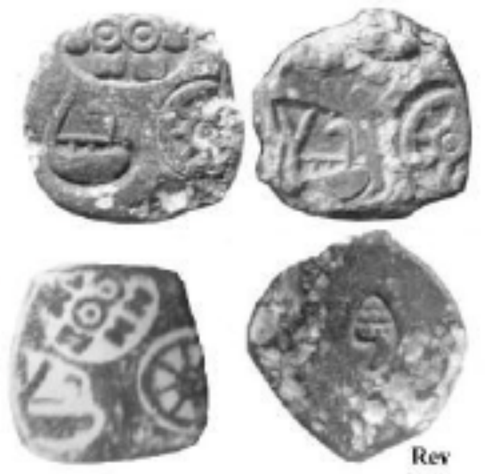
## Malhar

These coins share fewer *karshapana* characteristics: the style of the elephant and bull is distinctly post-Mauryan and the Brahmi letter 'Ma' is prominent, but they are of *karshapana* dimensions and struck from separate punchmarks.

| | | | | | |
|---|---|---|---|---|---|
| 626 | None | Base AR,<br>AR coated | 15 |  |  |
| Ref: Bhagava 1995. Type location is Malhar in Bilaspur District of Madhya Pradesh. Reverse is not reecorded, probably blank. Very rare. | | | | | |

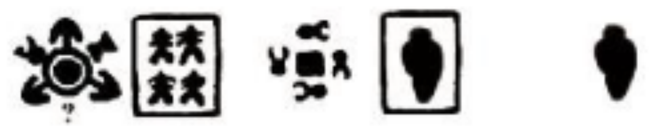
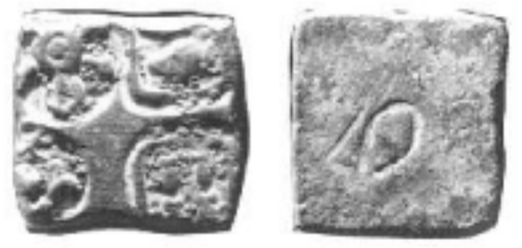
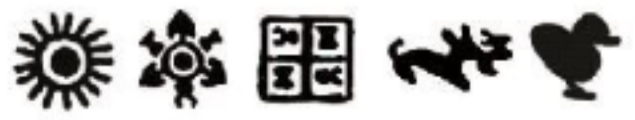
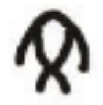
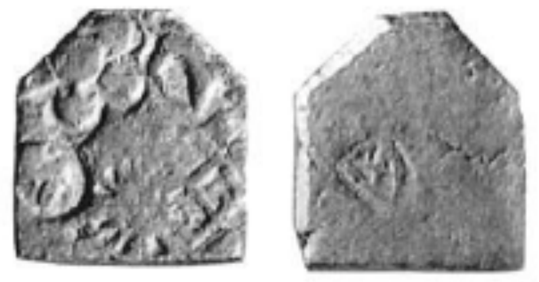
## Bengal region

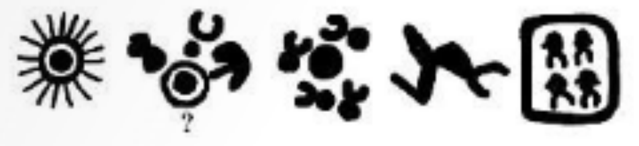
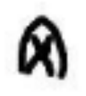
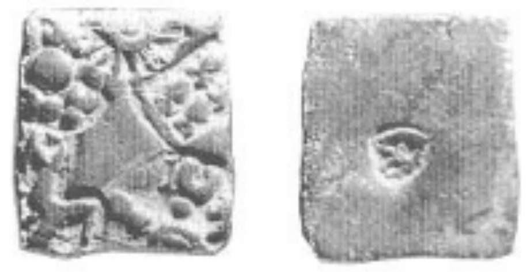
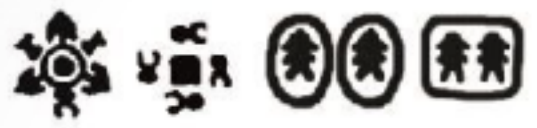
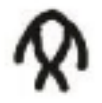
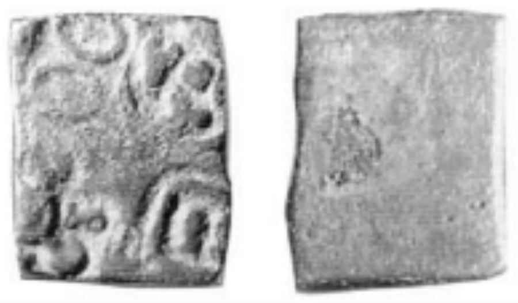
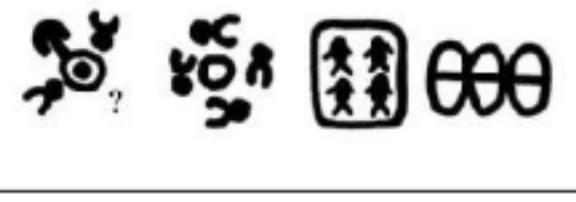
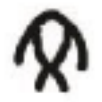
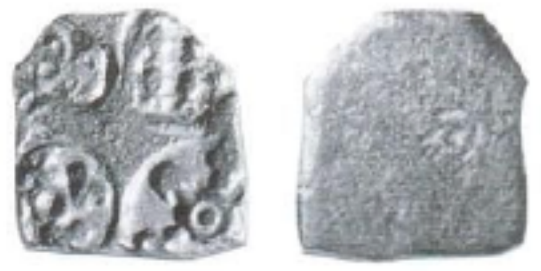
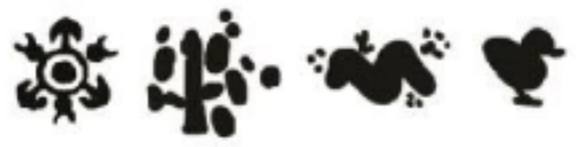
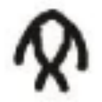
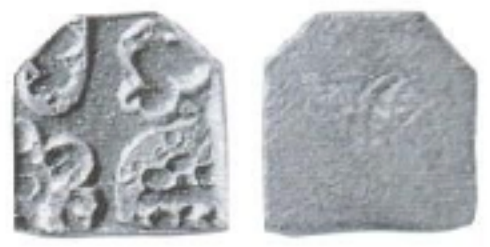
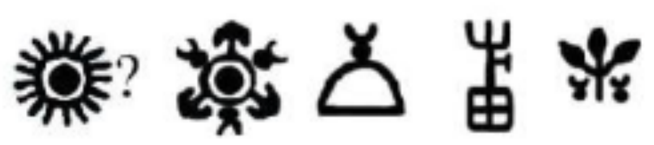
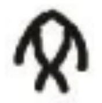
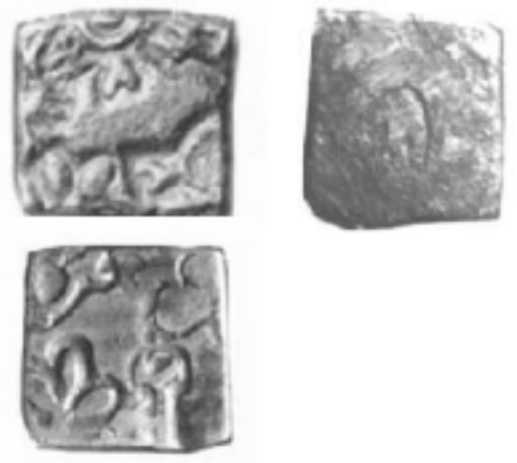
Coins showing a boat or ship have been excavated at Chandraketugarh, Bangarh and Harinayaranpur, (Chaudhury 1962) placing the locality in the region of ancient Vanga. The ship mark is significant as the coins occur in the region of the Lower Ganga/Brahmaputra where boat traffic would have been an efficient means of transport. Similar types are attributed to East Bengal by Mitchiner (2005). This group is included in Series VIII only because the coins are punchmarked. The fabric, metal, weight, number of marks and choice of subject have little in common with Mauryan coinage. The other series of coins bearing a ship motif in fine silver are believed to be contemporary with Series I (Types 264/7a-d).

| | | | | | | |
|---|---|---|---|---|---|---|
| 627 | None | base AR or AE | 17 |  |  |  |
| Ref: Mitchiner 2005 4651-4663, Chaudhury 1962. Three obverses and one reverse shown. Weight 2-3.3 grams. Rare in good condition. | | | | | | |

## Pandyas

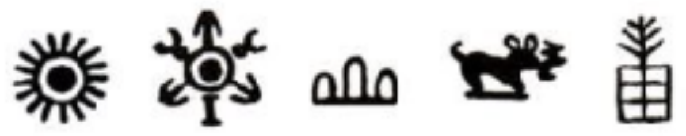
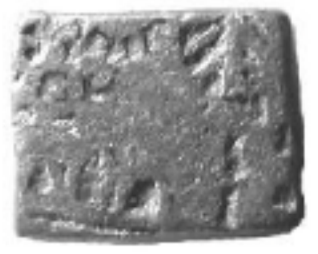
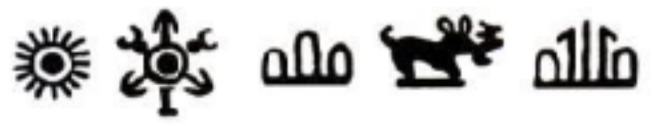
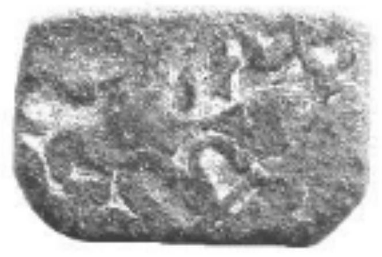
Post-Mauryan coinages in the south of India often use distinctive marks such as a fish or a conch/sankh shell. Krishnamurthy (1988) has attributed a group of copper punchmarked coins to the Pandya region of Tamilnadu that use a stylised fish symbol on the reverse. Mitchiner (1998, 2005) has examined similar coins. The Bodinayakanur hoard from west of Madurai (Aravamuthan, 1944, Kosambi 1951) contained over 1100 coins of Type 634. Obverse symbols use both Mauryan and local designs, in combinations that suggest blind copying with little attention to accuracy rather than an organised system.

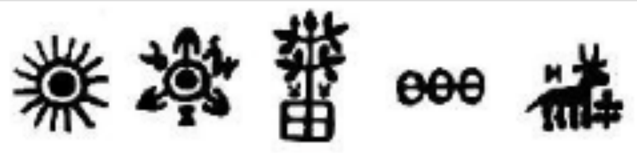
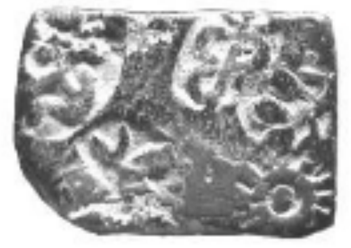
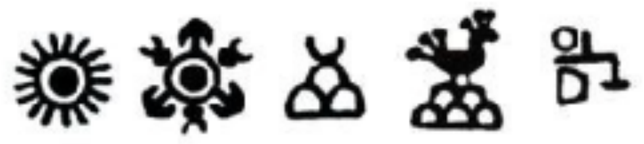
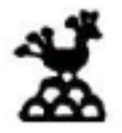
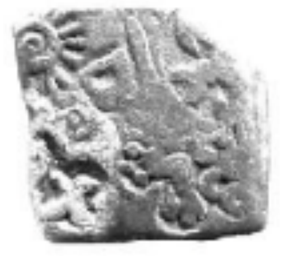
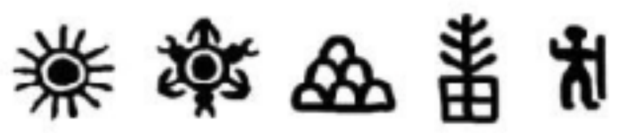
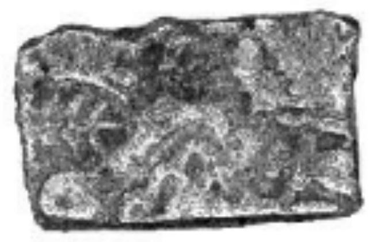
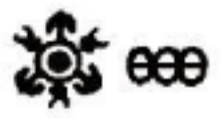
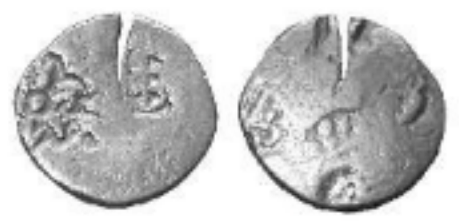
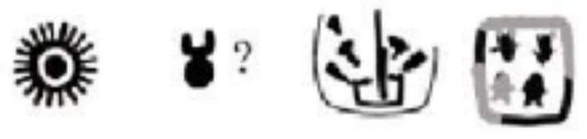
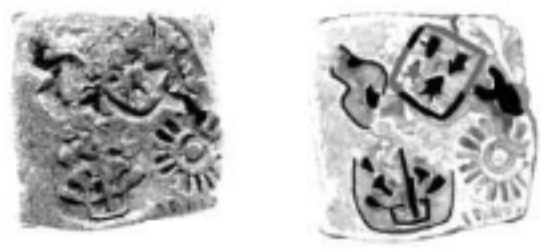
| | | | | | | |
|---|---|---|---|---|---|---|
| 628 | IV-V | Base AR | 15 |  | |  |
| Ref: Mitchiner 2005, 4898. | | | | | | |
| 629 | Va | Base AR | 15 |  |  |  |
| Ref: Krishnamurthy 1988, Mitchiner 2005, 4900. Weight range 2.5-2.7 grams. | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 630 | IV-V | Base AR | 15 |  |  |  |
| Ref: Krishnamurthy 1988, Mitchiner 2005, 4901. The fourth obverse symbols may be a degraded dog-with-pup in mouth. | | | | | | |
| 631 | IV-V | Base AR | 15 |  |  |  |
| Ref: Krishnamurthy 1988, Mitchiner 2005, 4902. Note only four obverse marks. | | | | | | |
| 632 | IV-V | Base AR | 15 |  |  |  |
| Ref: Krishnamurthy 1988, Mitchiner 2005, 4903. | | | | | | |
| 633 | IV-V | Base AR | 15 |  |  |  |
| Ref: Krishnamurthy 1988, Mitchiner 2005, 4904. | | | | | | |
| 634 | VIb | Base AR | 15 |  |  |  |
| Ref: Aravamuthan 1944, Ramachandra 1957-1958, Mitchiner 2005, 4907-4911. The taurines beside the plant are as quoted by Mitchiner, and the sun is mentioned by Ramachandra but they are not clear on his examples. Symbol designs vary in detail. Two obverses shown. | | | | | | |

## Unattributed coins with silver wash

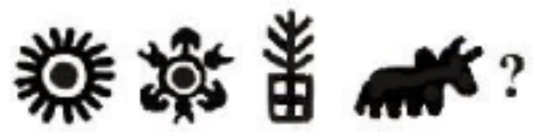
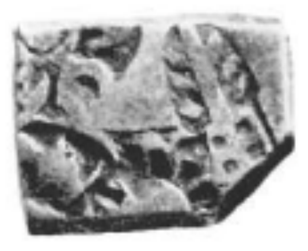
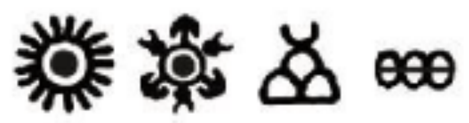
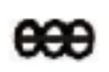
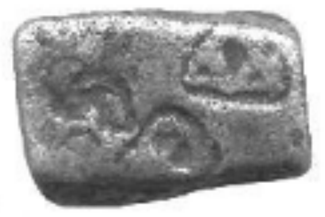
Coins imitating Mauryan types from Series V and VI have been noted from widespread hoards (not just in the northwest) with base metal cores and a silver wash, often barely apparent. The symbols are faithfully copied from authentic coins. Unlike those of Type 613 above, there is no chain of progressively degraded derivatives. Such coins may therefore be contemporary forgeries made during Mauryan rule, but they are listed in here because of their base metal. The types shown below are not necessarily exhaustive.

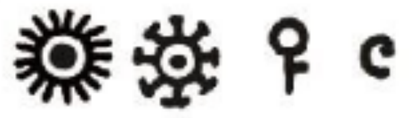
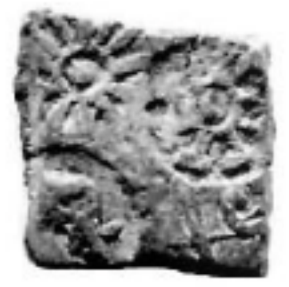
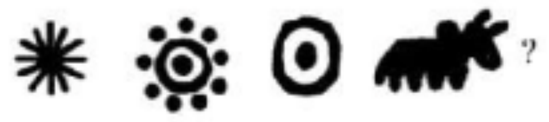
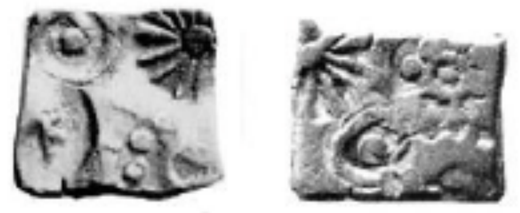
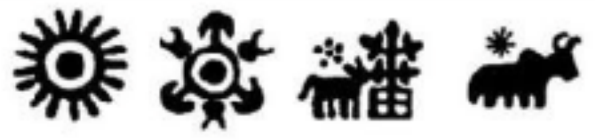
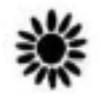
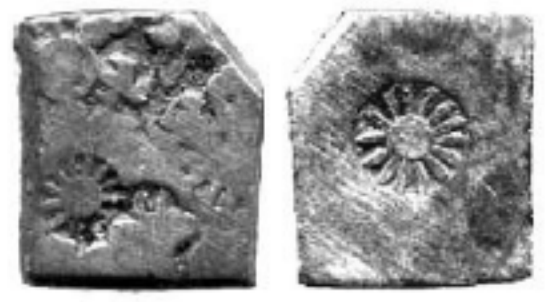
| | | | | | |
|---|---|---|---|---|---|
| 635 | 481 | Silvered AE | 15 |  |  |
| Ref: A. Reverse bankers marks. | | | | | |
| 636 | 482 | Silvered AE | 16 |  |  |
| Ref: A. Reverse plain. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 637 | 507 | Silvered AE | 17 |  | |  |
| Ref: A. Reverse trace of bankers' mark. | | | | | | |
| 638 | 570 | Silvered AE | 16 |  |  |  |
| Ref: A. | | | | | | |
| 639 | (*cf* VI III) | Silvered AE | 17 |  | ? |  |
| Ref: Trade. Reverse not recorded. | | | | | | |
| 640 | (VIb) | AE | 16 |  plus one uncertain | Five uncertain marks |  |
| Ref: BA. The side with five marks does not contain sun or six-armed symbol, but it may have been intended as the obverse. Attributed to Malwa by Mitchiner 2004, *cf* 4703-4704. Rare? | | | | | | |
| 641 | VIb | Base AR | 15 | ?  | | <br>Photo Drawing over photo |
| Ref: RT. The symbols are crudely cut but seem to be imitatiing Series VI II D. The Taurine may be a part of a larger symbol. The coin is shown twice; on the right the doubtful marks are highlighted. | | | | | | |

## Unattributed Base AR or AE four-mark coins

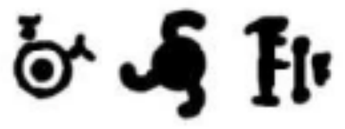
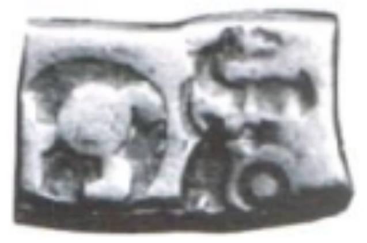
Examples of base silver and copper coins on small dumpy flans with apparently only four marks, but not imitating Type 566, (see Type 613), have occurred in trade over a long period of time, sometimes as separate groups and sometimes mixed with other late Mauryan coins. No regional trend has been noted but that is not to say one does not exist. The best of these coins merge imperceptibly with genuine Mauryan coins with such small flans that the five marks are not clear. The worst of them show incorrect imitations of official marks. They may therefore not all belong to a single issuing authority but are grouped together here simply because they share the property of four marks, which seems more likely to suggest a post-Mauryan context.

| | | | | | | |
|---|---|---|---|---|---|---|
| 642 | VI IV B | Base AR | 15 |  | |  |
| Ref: Trade. The bull is partly visible bottom left. Reverse not recorded. | | | | | | |
| 643 | VI IV C | Base AR | 16 |  |  |  |
| Ref: A. The sun symbol is just apparent at top left. | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 644 | none | AE | 15 |  | |  |
| Ref: Trade. Fourth mark incomplete. Reverse not recorded. | | | | | | |
| 645 | none | Base AR, AE | 12 |  | |  |
| Ref: Trade. Reverse not recorded. Two examples shown. Bull bottom right on second coin. | | | | | | |
| 646 | Va-b | AE | 16 |  |  |  |
| Ref: Errington 2003 Plate 18 no 10. Errington mis-identifies the fourth mark. | | | | | | |

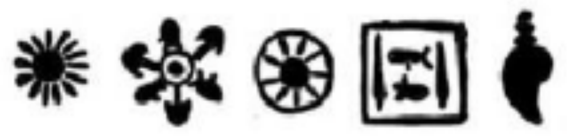
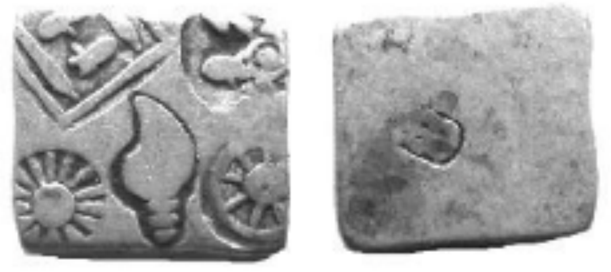
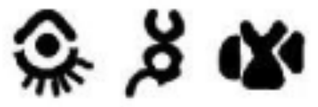
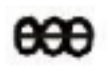
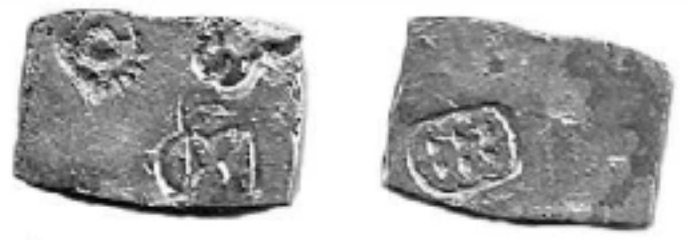
## Base AR coins with triskeles and standard-like symbols

Coins in base silver bearing two marks, sometimes in conjunction with other marks, are said to come from the Patna region. The two main marks are sometimes seen overstruck on coins of Type 566, and sometimes on fresh flans.

| | | | | | |
|---|---|---|---|---|---|
| 647 | None | Base AR | 13-16 |  |  |
| Ref: Mitchiner 2005, 4640. Imitation of six-armed symbol, triskeles and object resembling 'standard' and 'dumbbell' marks. Wide range of variants. | | | | | |

## Miscellaneous unattributed coins

Very occasionally a coin shows some non-Mauryan characteristics yet it is difficult to place it in any specific Series. Such pieces might be genuine Mauryan issues or later issues. Two examples are given.

| | | | | | | |
|---|---|---|---|---|---|---|
| 648 | None | Fine AR | 17 |  | |  |
| Ref: A . From a hoard of Series IV to VI which also contained two examples of Type W11 (forgeries). This coin is of good silver, weight 3.14 grams. The conch is seen on Type 372 (Series IVb) and on post - Mauryan coins of Bengal or the Pandyas (Types 627-8). Sun and six-armed symbols do not look authentic. Bhandare (*pers. comm.*) suggests it may be a genuine issue of a 'transitional' late Mauryan mint. Unique. | | | | | | |
| 649 | 566? | Base AR | 18 |  ? ? |  |  |
| Ref: Alex Fishman. Reverse mark is Mauryan butthe obverse marks make little sense. Possibly a degraded imitation of Type 566. | | | | | | |

# Unclear Coins

When coins show indications of being of a new variety but contain insufficient evidence for a clear placement in the main catalogue, for example because marks are missing or not clear, they appear in the following table, where they are classified by Series and numbered with the prefix U. Such coins have been chosen if they show enough of the type to allow for the possibility that future examples may resolve their full description; many more exist where poor striking or wear precludes this possibility.

Each coin is illustrated twice, the second photo being lighter but with the critical marks highlighted. A convention is followed as in Fig. 44.

I am grateful to the various collectors named in the Catalogue for drawing my attention to these coins.

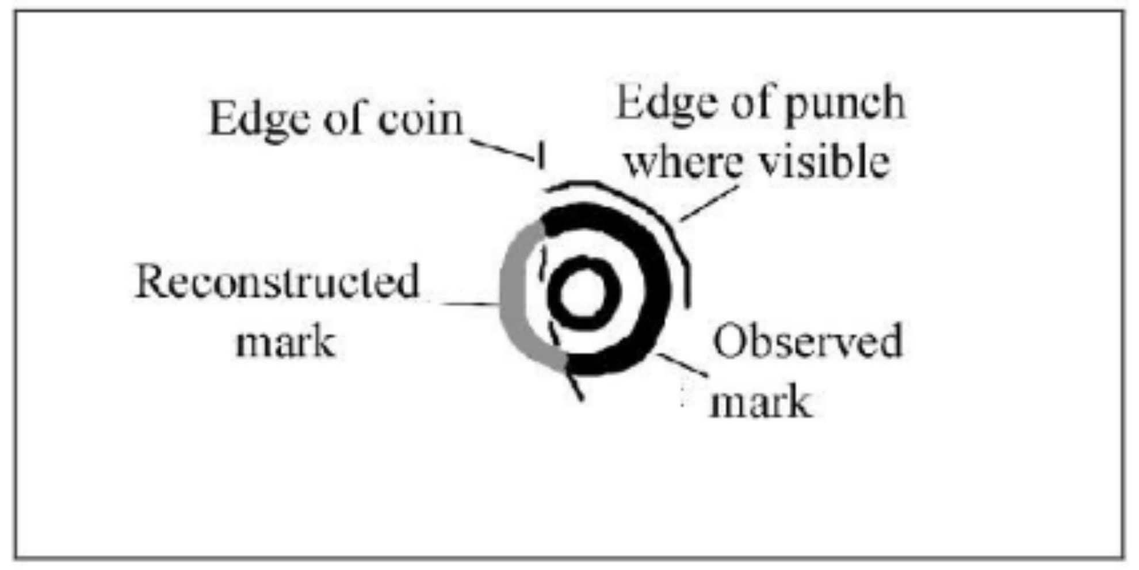
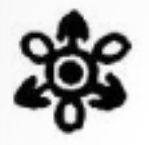
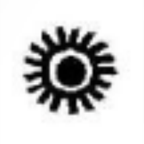
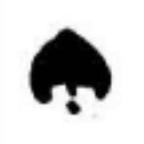
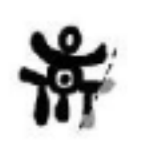
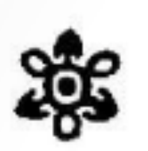
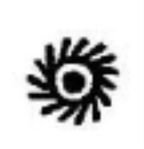
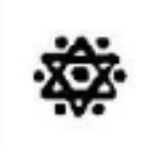
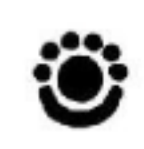
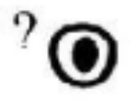
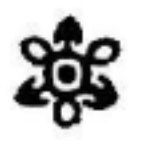
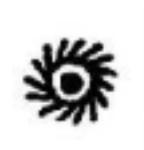
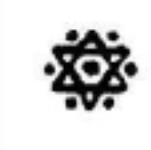
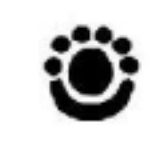
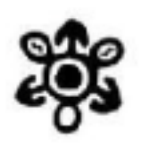
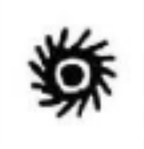
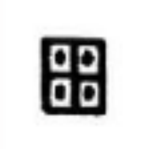
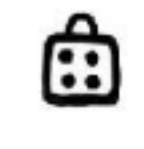
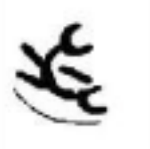
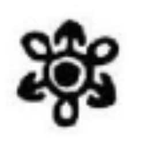
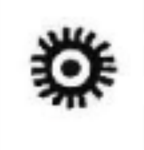
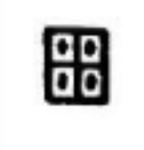
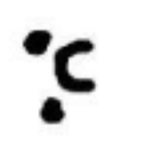
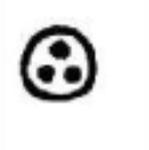
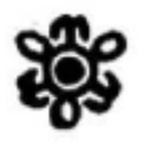
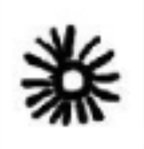
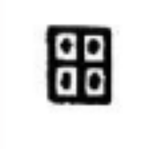
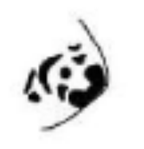
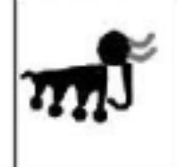
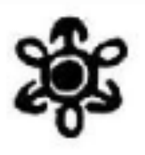
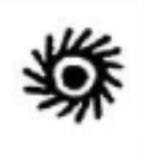
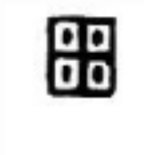
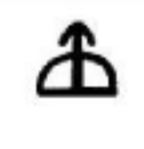
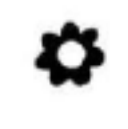
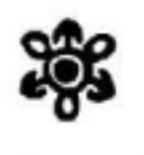
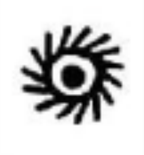
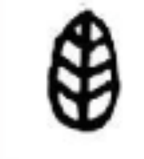
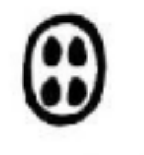
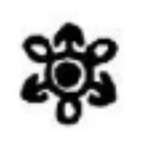
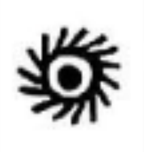
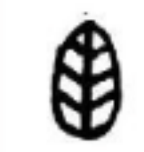
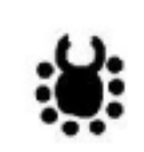
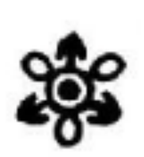
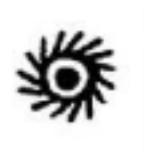
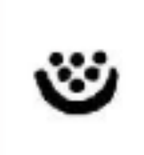
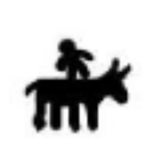
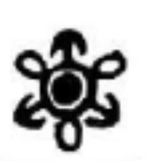
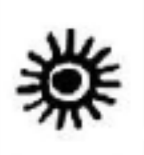
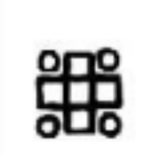
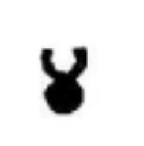
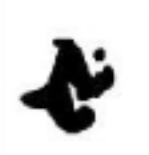
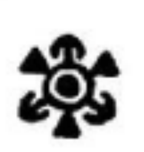
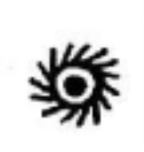
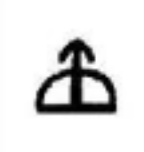
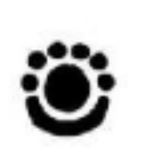
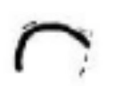
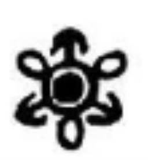
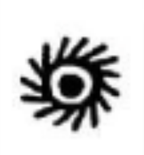
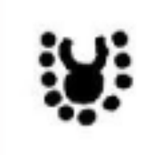
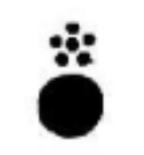
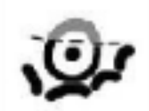
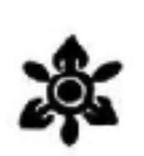
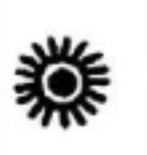
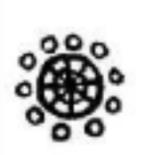
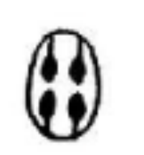
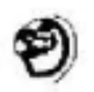
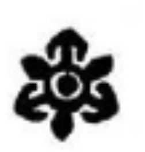
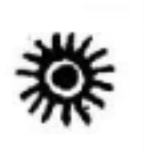
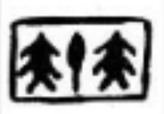
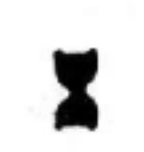
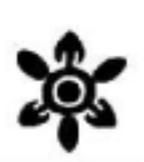
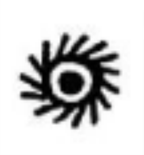
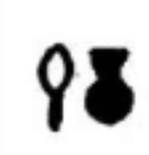
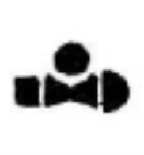
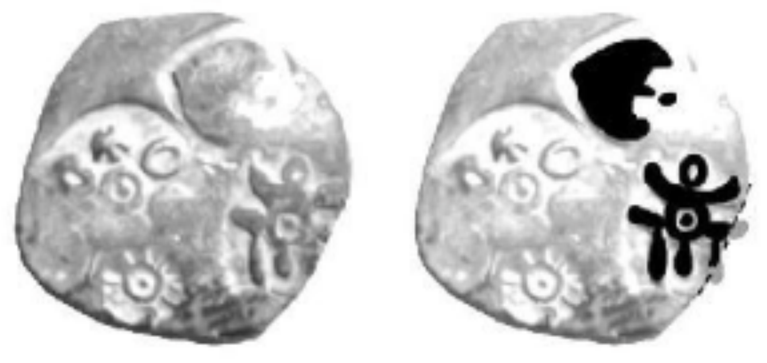
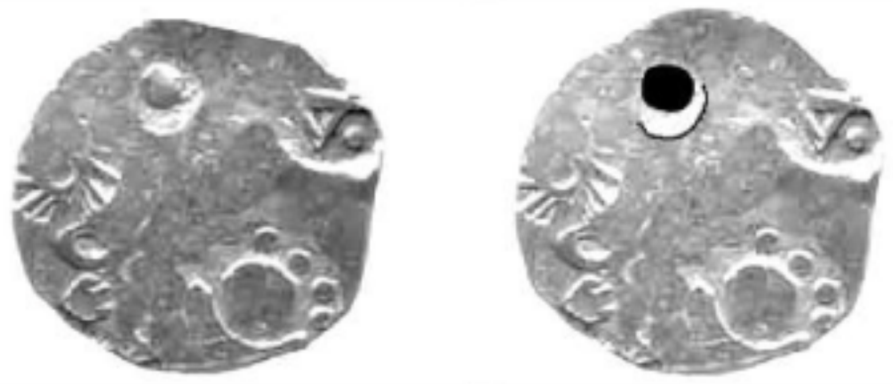


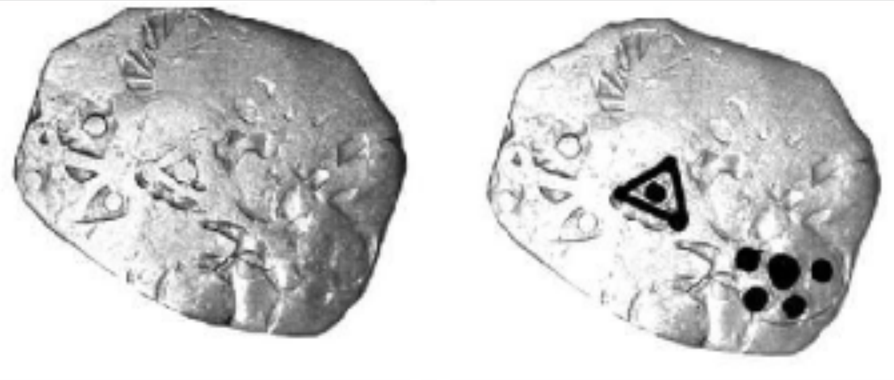
Fig. 45: Conventions for illustrating unclear marks

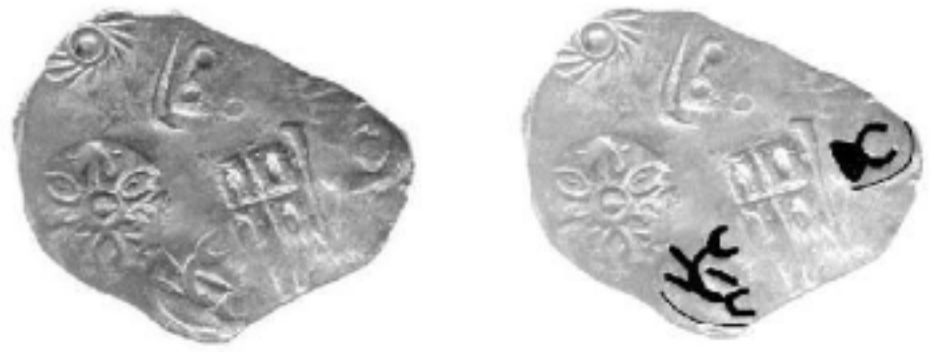
## UNCLEAR COINS

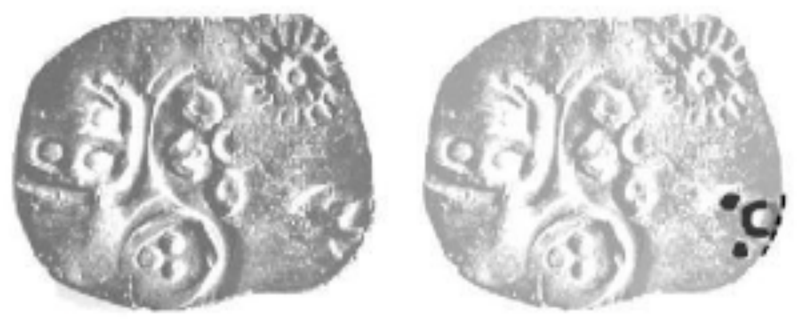
| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| U1 | 0<br>M2777 |  |  |  |  | - | This coin was part of the Katra hoard illustrated by Mitchiner but the third and fourth marks are not clear. The weight is approximately 5.4 grams. |
| U2 | I IV C 45?<br>PT |  |  |  |  | ?  | The fifth mark appears as a dot with no outer circle so may not be mark 45. |
| U3 | I IV C<br>PT |  |  |  |  | ? | Two marks contend for fifth place but neither is convincing - the dot-in-triangle has pellets in the corners unlike the official mark; this is most likely a four-mark coin. |
| U4 | I VI E 32?<br>PT |  |  |  |  |  | The fifth symbol is malformed |
| U5 | I VI H 47 ?<br>BM |  |  |  |  |  | The fourth symbol should be a plant; a different mark seems to be present but very incomplete. |
| U6 | I VI<br>RT |  |  |  |  |  | The fourth mark is incomplete and probably has another mark on top of it, therefore cannot be classified from the present example. |
| U7 | I VI ?<br>SS |  |  |  |  |  | This coin may have the bow & arrow in error or may be a new class. The fifth mark, if 35, lacks a central dot. |
| U8 | I VIII A<br>PT |  |  |  |  | ? | There are four possible contenders for the fifth mark on this coin, but only the partial crescent of dots resembles any known mark. |
| U9 | I VIII B<br>PT |  |  |  |  | ? | Two possible fifth marks: the dot in circle has rough outlines not commensurate with official marks, the taurine is an odd shape. |
| U10 | I XIII A<br>Fitz |  |  |  |  | ? | The options for the fifth mark are too fragmented to allow a firm conclusion; the crude bull right is probably a bankers' mark. |
| U11 | I XIV A<br>PT |  |  |  |  |  | The most likley fifth mark appear to be two human legs facing right but another large partly struck symbol lies above it. |
| U12 | I XVIII C<br>PT |  |  |  |  |  | The fifth symbol might be mark 44, a large almost-complete circle with nothing inside. |
| U13 | I XVIII ?<br>SS |  |  |  |  |  | The third mark should be a bow & arrow, the coin is either a mint error or a new class, but the fifth mark is not clear. |
| U14 | I XIX A<br>A |  |  |  |  |  | An incomplete and badly formed fifth symbol, probably comprising something within a circle. |
| U15 | I XX A<br>RT |  |  |  |  | ? | There are seven marks on this coin that could be the fifth mark. Highlighted are the two most likely. |
| U16 | I XX A<br>PT |  |  |  |  | ? | Two large marks contend for the fifth symbol; both are plausible. |

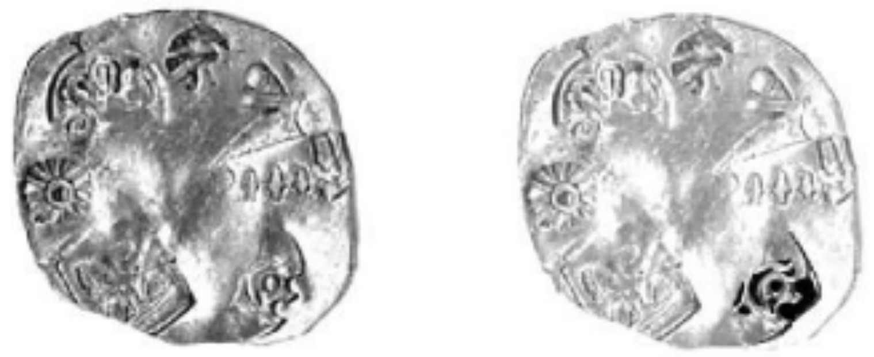

U1

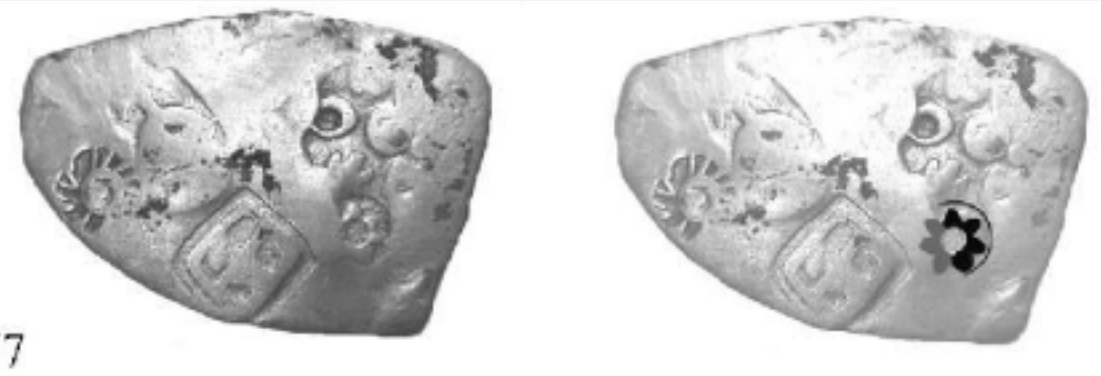

U2

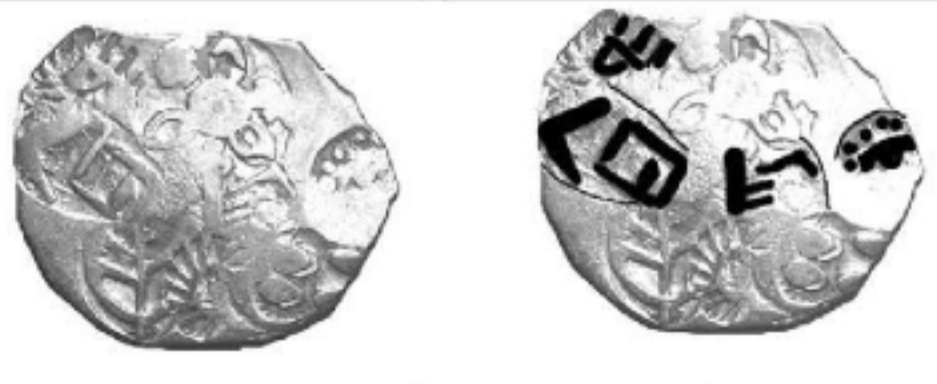

U3

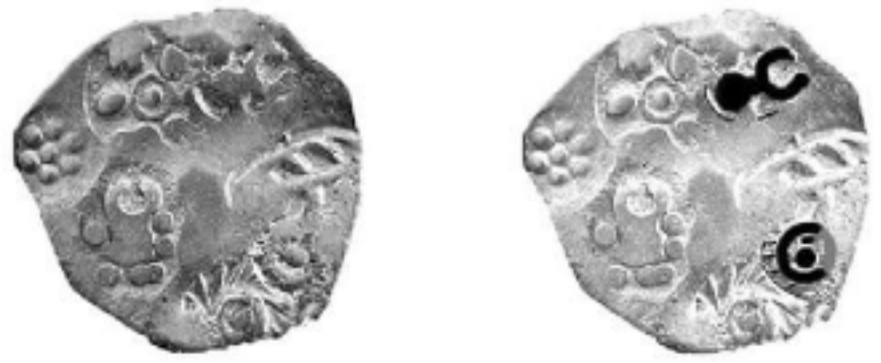

U4

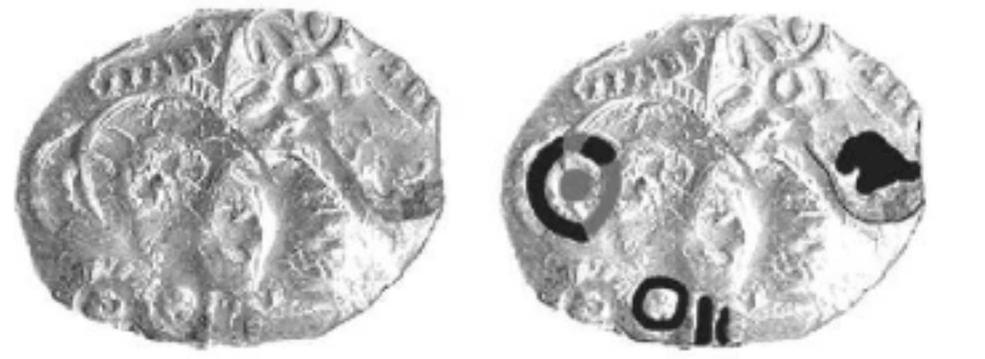

U5

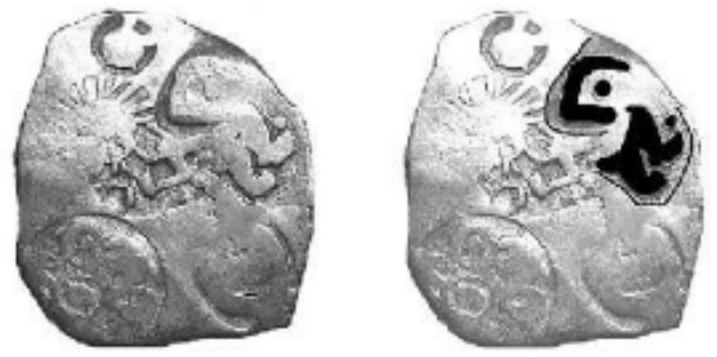

U6

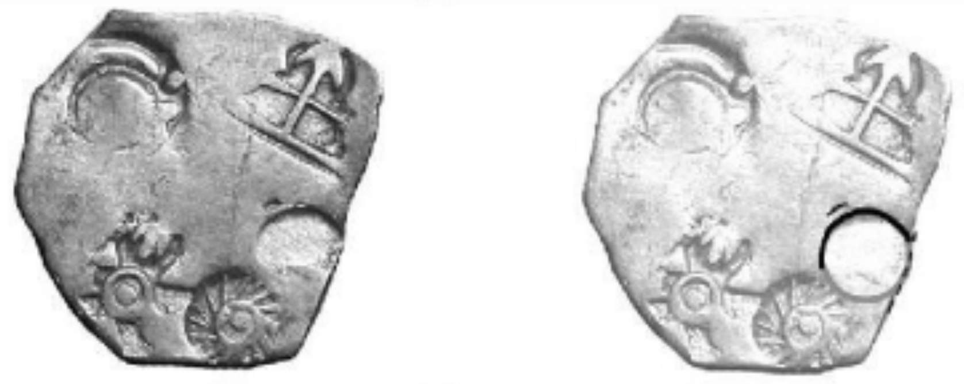

U7

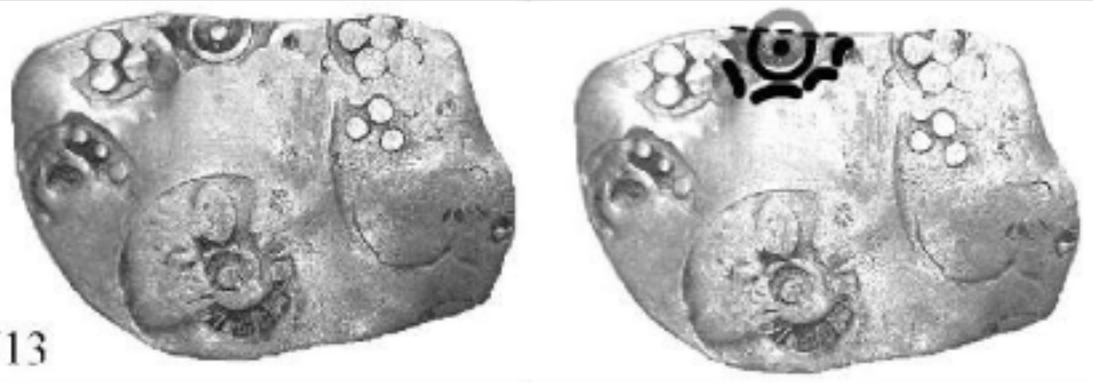

U8

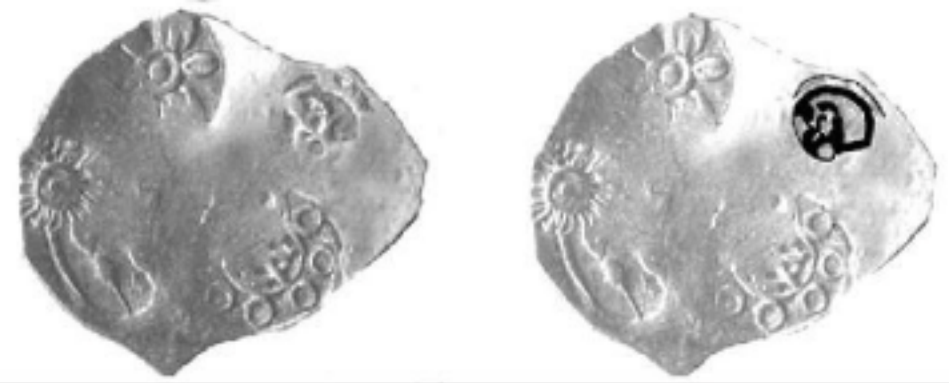

U9

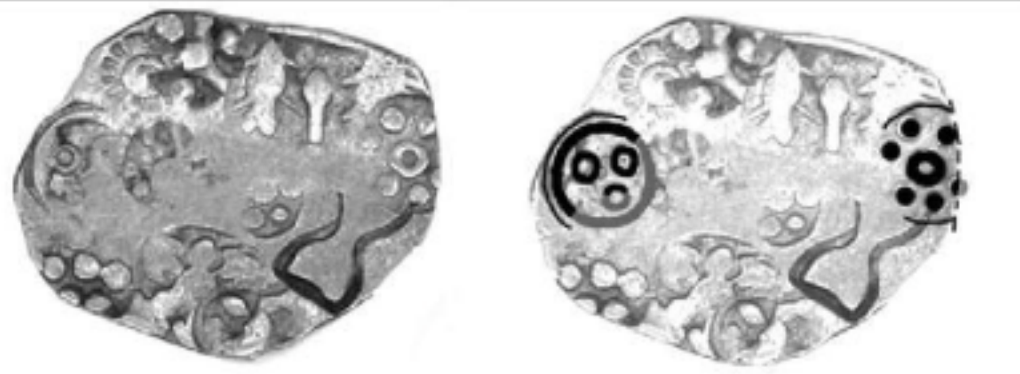

U10

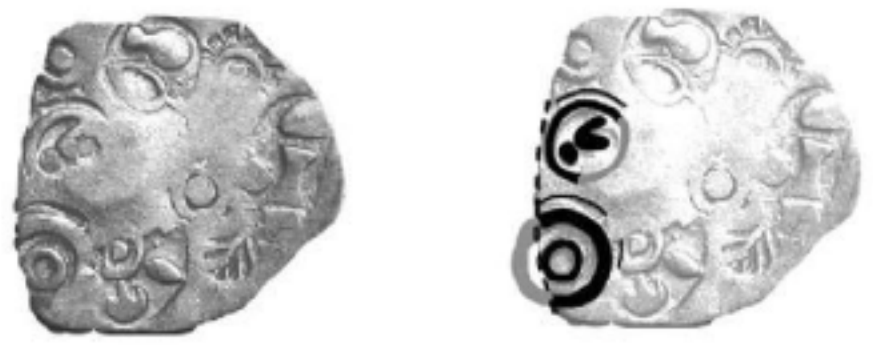

U11


U12

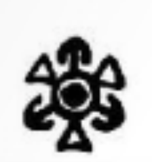
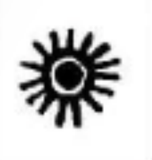
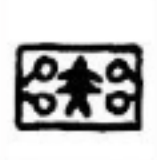
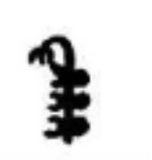
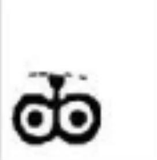
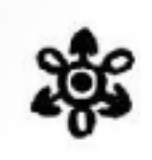
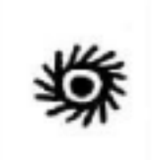
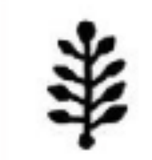
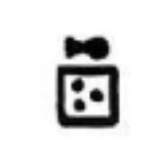
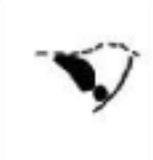
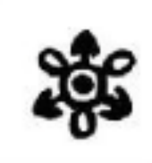
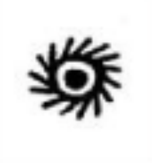
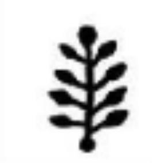
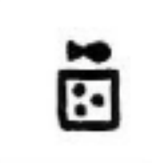
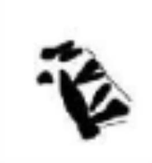
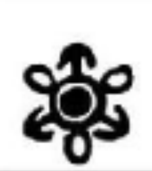
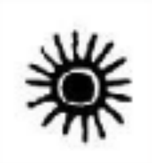
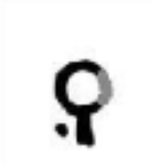
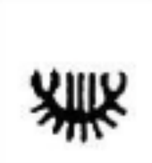
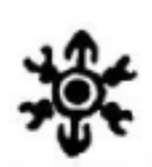
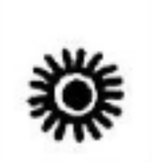
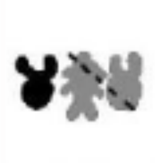
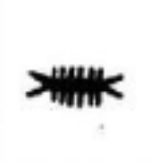
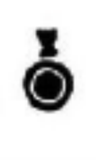
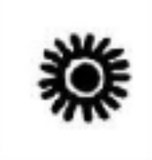
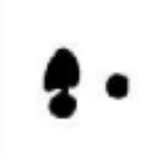
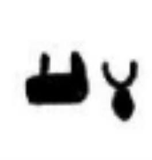
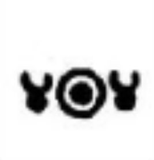
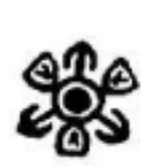
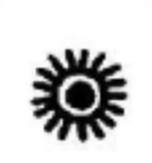
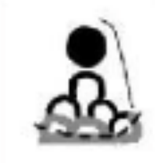
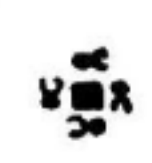
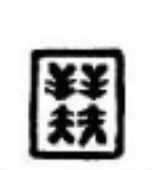
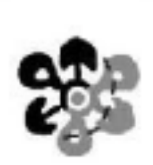
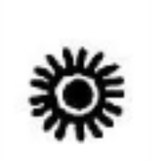
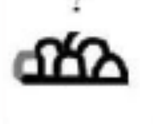
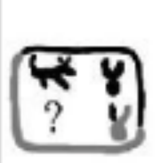
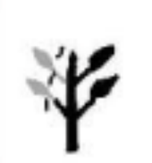
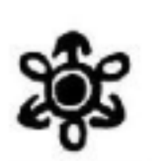
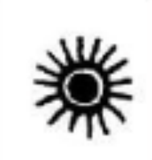
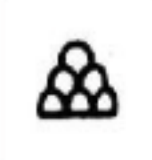
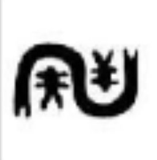
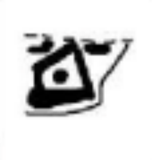
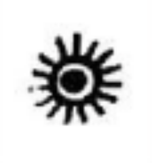
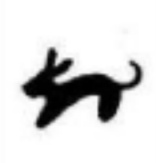
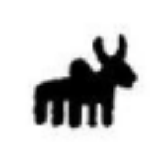
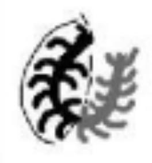
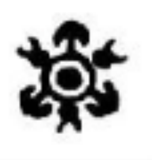
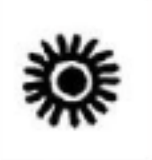
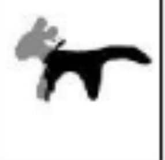
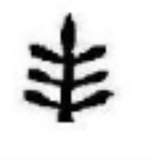
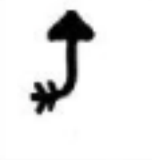
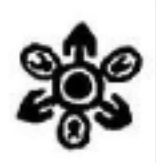
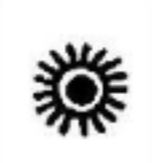
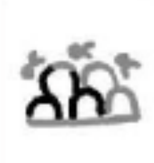
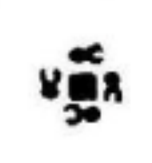
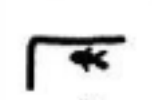
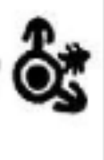
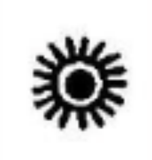
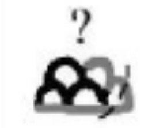
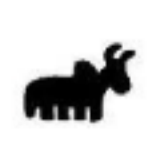
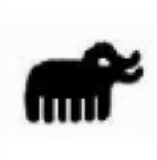
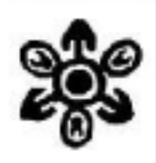
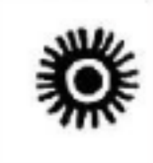
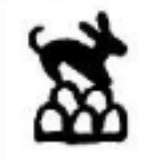
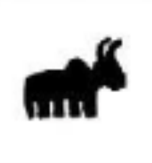
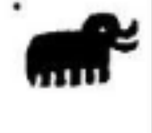
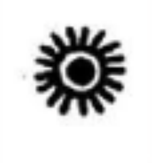
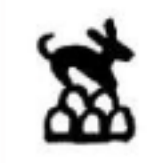
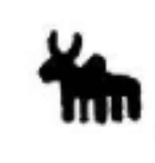
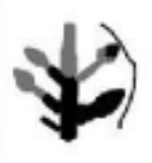
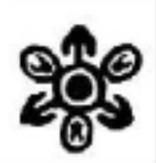
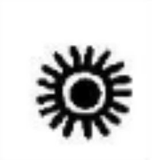
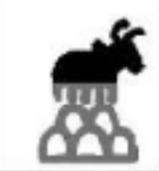
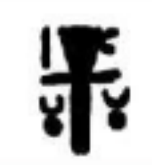
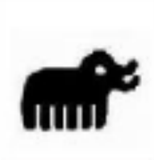

U13

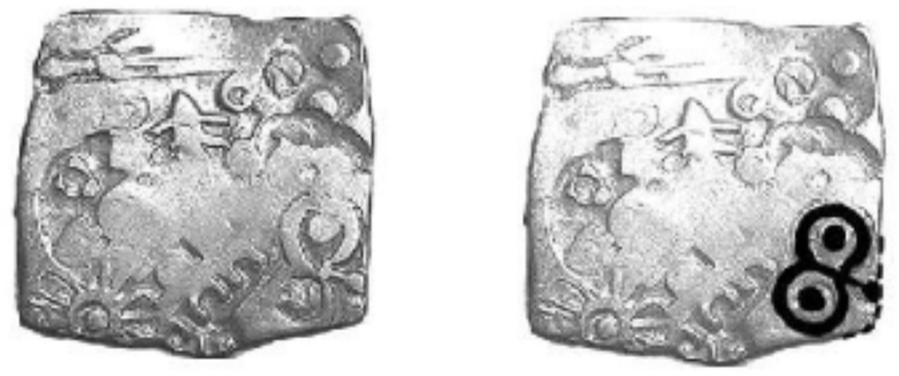

U14

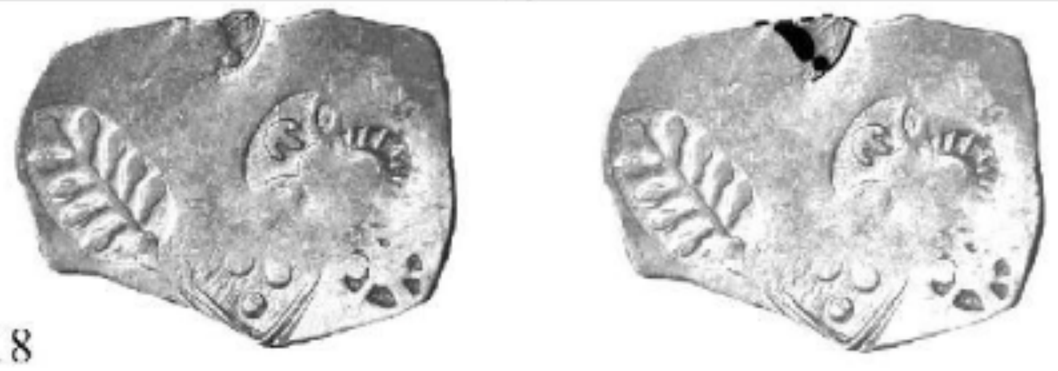

U15

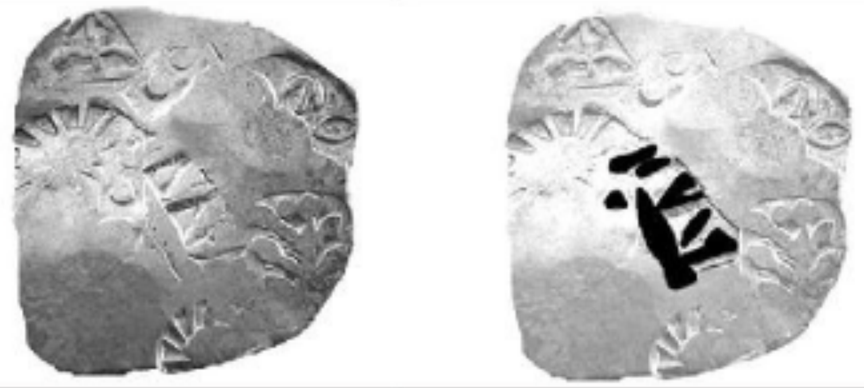

U16

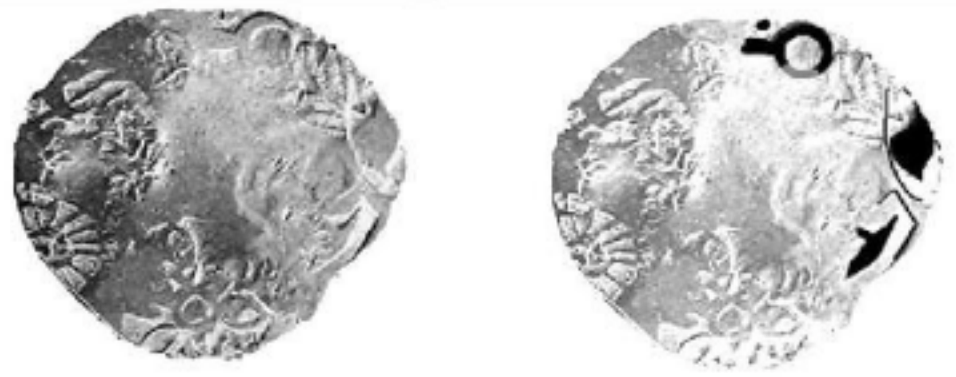
## UNCLEAR COINS

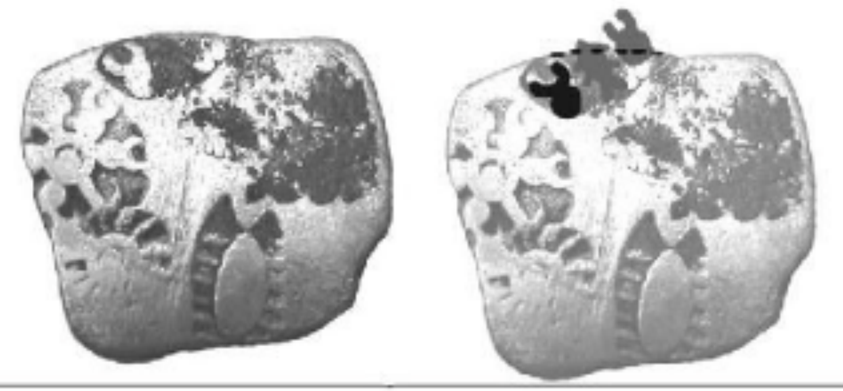
| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| U17 | I XXVII A<br>PT |  |  |  |  |  | The most obvious fifth mark is incomplete and unknown except from this example. |
| U18 | I XXXIX A36?<br>PT |  |  |  |  |  | The fifth mark is represented only by a small part; it might be elephant left or an unknown symbol. |
| U19 | I XXXIX A?<br>PT |  |  |  |  |  | The likely fifth mark on this example of the new class I XXXIX bears no resemblance to any known mark but it is not complete. |
| U20 | I ? (phase 1)<br>PT |  |  |  | ? |  | Old obverse restruck by I XI with only three marks clear; the possible marks are fragmentary and do not resemble any known marks. |
| U21 | II?<br>BB |  |  |  | ? |  | Old obverse of type U25, the six-armed symbol is known for Series II but only on type 271. A new variety is thus implied. |
| U22 | III?<br>BB | ?  |  |  |  |  | Many bankers' marks make it hard to discern official marks. Two suns and a spare taurine add to the confusion. |
| U23 | IVa<br>BB |  |  |  |  |  | Overstruck on a Series II coin, thus suggesting Series IVa, this coin appears to have a new variety of third mark. The fifth is very tentative. |
| U24 | IVa?<br>BM |  |  | ?<br> |  |  | Does not match any published type; the fourth mark seems to have a dog and a taurine in a rectangle. |
| U25 | IV VIII C<br>MM |  |  |  |  |  | The fifth symbol is unrecorded but incomplete. |
| U26 | IV XXII C 79?<br>RT | ? |  |  |  |  | Six arms missing, fifth mark only partly on flan, may be mark 79. |
| U27 | IV XXII<br>RT |  |  |  |  |  | The form of the third mark, an animal with a long tail, may not be the same as in IV XXII, which is not seen in its full form on any coin so far. |
| U28 | IV XXVII A ?<br>BB |  |  |  |  | <br>? | Third and fifth marks very incomplete. This is a double obverse coin struck on Type 278 thus suggesting this group belongs in Series IVa. |
| U29 | IV XXIX C 1?<br>JL | ?  |  | ?<br> |  |  | Not clear what lies above the arches symbol |
| U30 | IV XXXI G 1? |  |  |  |  | ?<br> | The 3rd, 4th and 5th marks are well concealed and an extra wheel mark is unexplained, possibly a mint error. |
| U31 | IV XXXI H<br>A | ? |  |  |  |  | The fifth mark overlaps a very unclear six-armed symbol but appears to be a tree, though not symmetrical. |
| U32 | IV XXXIII A<br>RT |  |  |  |  |  | The third mark shows only a bull, the arches are probable. The fourth mark has a bar to the left of the standard and only two taurines visible. |

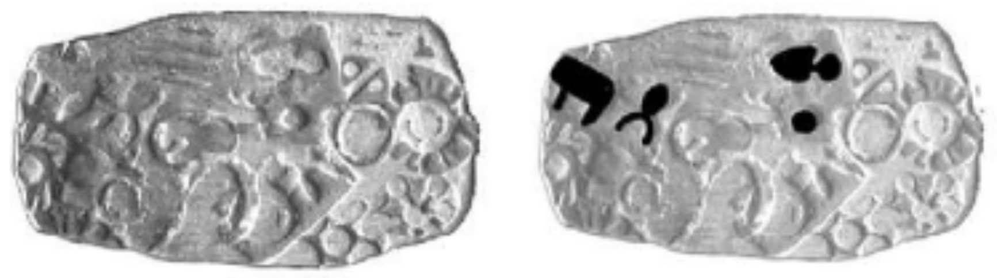

U17

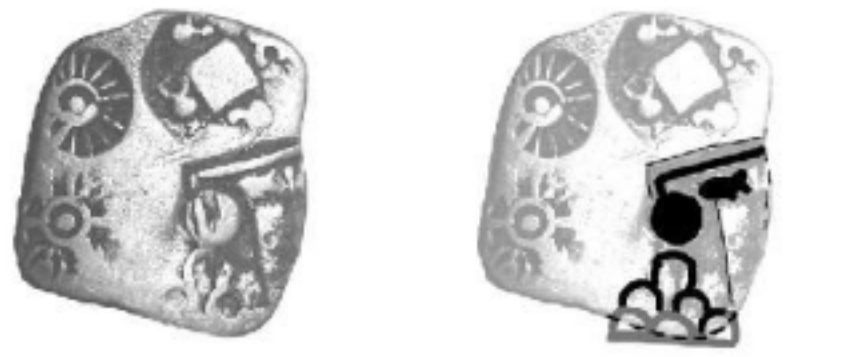

U18

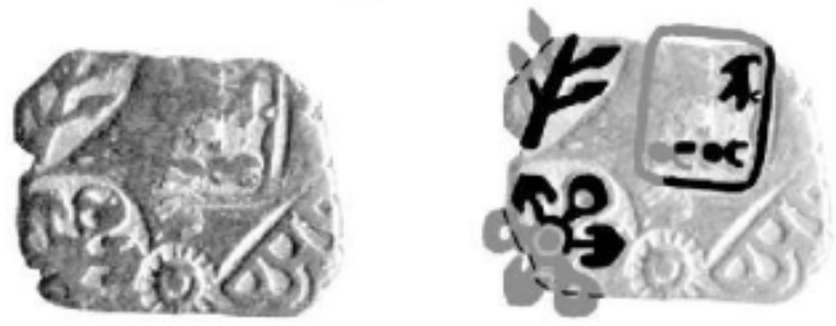

U19

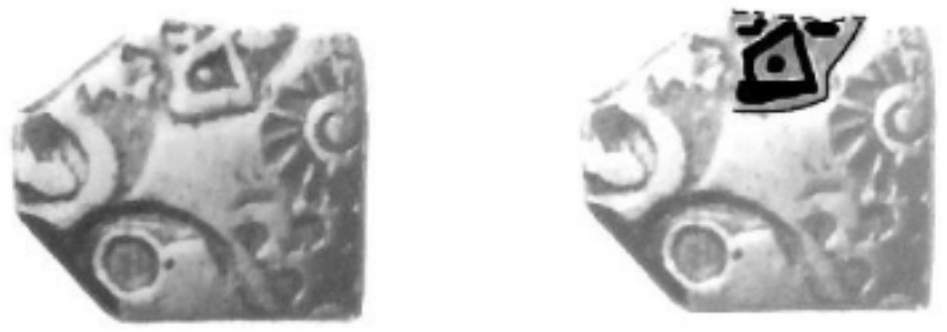

U20

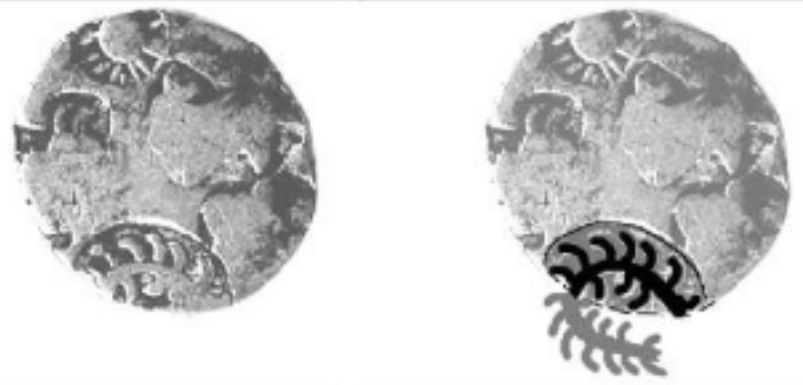

U21

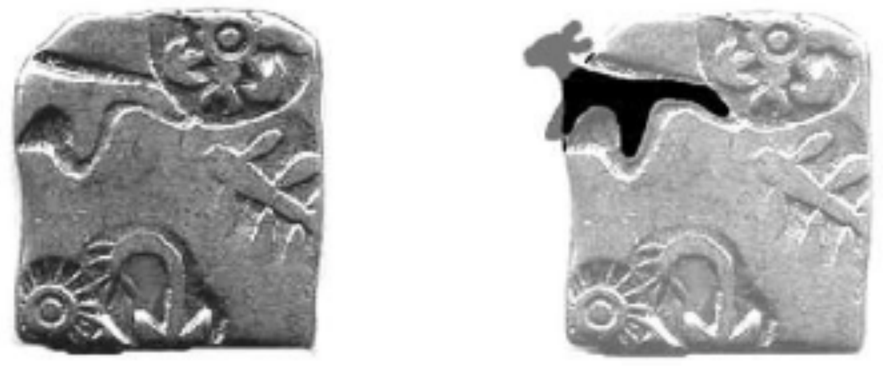

U22

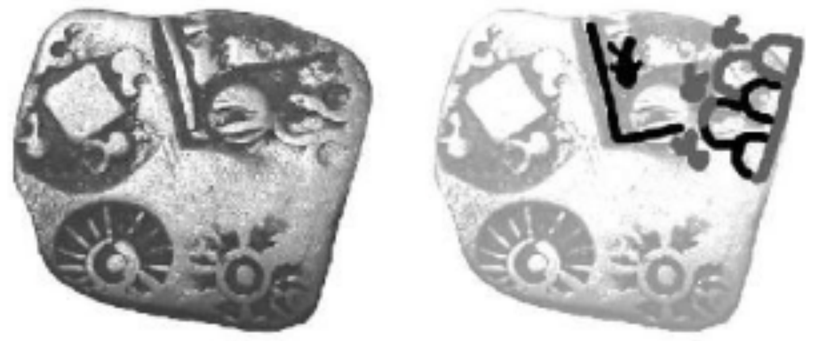

U23

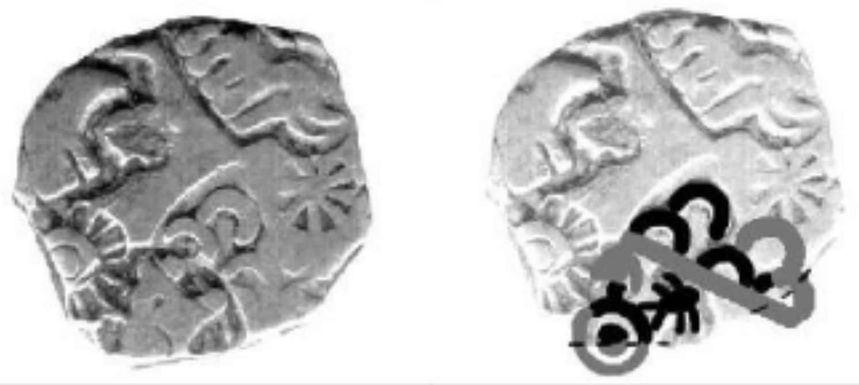

U24

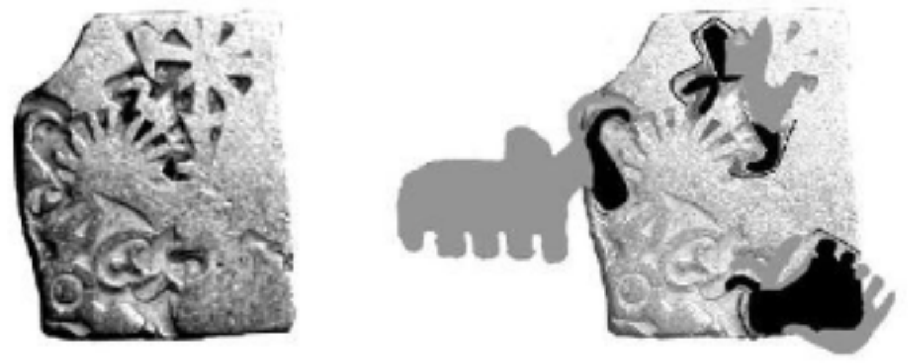

U25

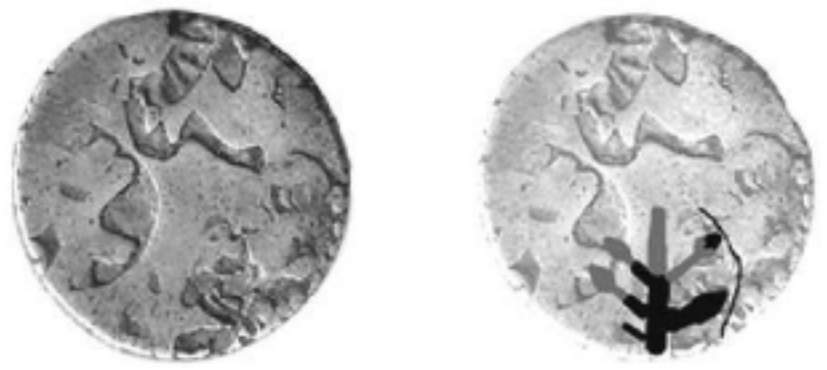

U26

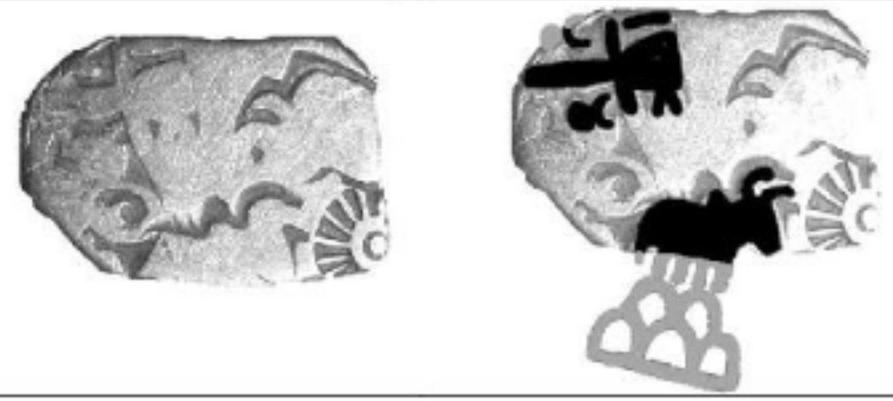

U27


U28

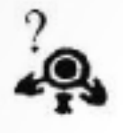
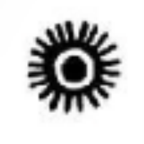
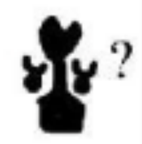
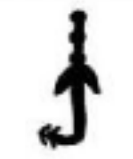
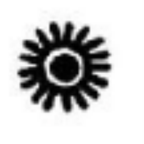
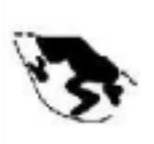
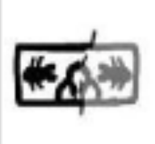
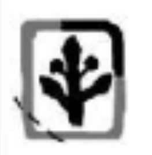
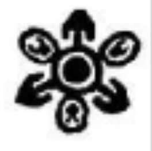
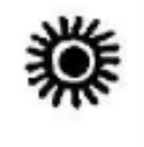
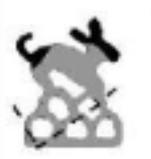
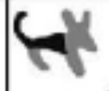
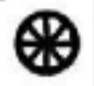
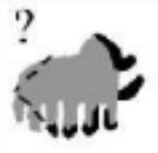
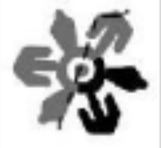
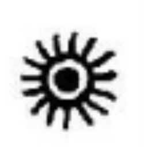
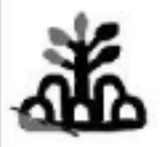
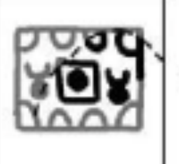
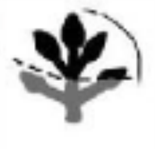
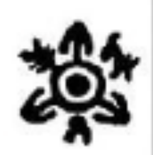
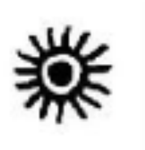
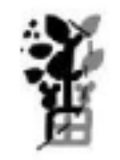
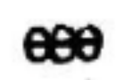
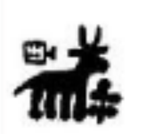
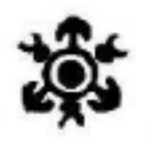
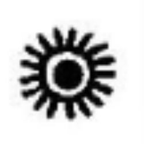
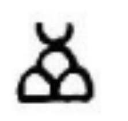
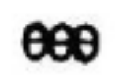
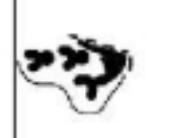
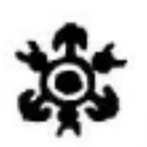
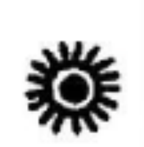
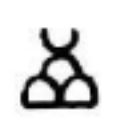
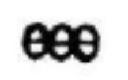
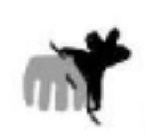
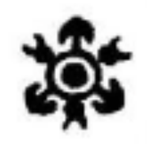
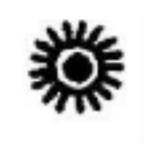
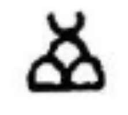
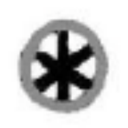
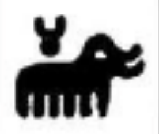
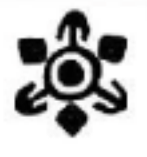
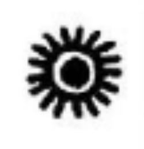
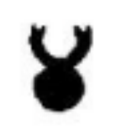
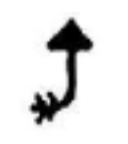
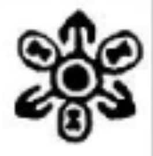
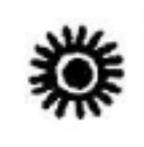
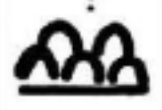
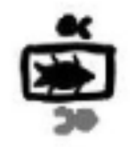
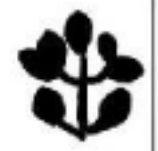

U29


U30


U31


U32

## UNCLEAR COINS

| TYPE | CLASSIFICATION & REFERENCE | OBVERSE MARKS | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| U33 | IV<br>RT | ?  |  |  ? | |  | An enigmatic coin. Third mark as drawn here is a possible interpretation of the mark seen on the coin. Six-armed symbol suggests Series IV. |
| U34 | IV?<br>BB | ? |  |  |  |  | No six armed symbol; the animal-like mark might be a frog, the taurine is not certain. 3-arches & fishes suggest Series IVa. |
| U35 | IV?<br>PT |  |  |  |  or  | ?  | Fourth mark either dog right or wheel, elephant mark tentative |
| U36 | IV?<br>Internet |  |  |  |  |  | Third and fourth marks incomplete but unrecorded; in the style of IVd. |
| U37 | V XIII A<br>Fitz |  |  |  |  |  | The third mark contains clear dots where the normal form has only leaves. It is also malformed on the trunk. See also Type 514 in main Catalogue. |
| U38 | VI III C ?<br>T |  |  |  |  |  | The fifth mark cannot be 'dog & tortoise' because the taurines are arranged differently, but the full form of this mark cannot be guessed. |
| U39 | VI IV C 46?<br>A |  |  |  |  |  | The fifth mark is not a deer (Types 548-9) but also does not look like the normal bull. |
| U40 | VI III H ?<br>RT |  |  |  |  |  | The fourth mark is not certain and the fifth, elephant with taurine above, is new. |
| U41 | I or III?<br>SS |  |  |  | |  | This coin uses the taurine as seen in Series I but a fifth mark introduced in Series III, yet it appears authentic.[1] |
| U42 | IVd?<br>A |  |  | ?  |  |  | Third mark has uncertain object above the arches. Fourth and fifth marks possibly incomplete. |

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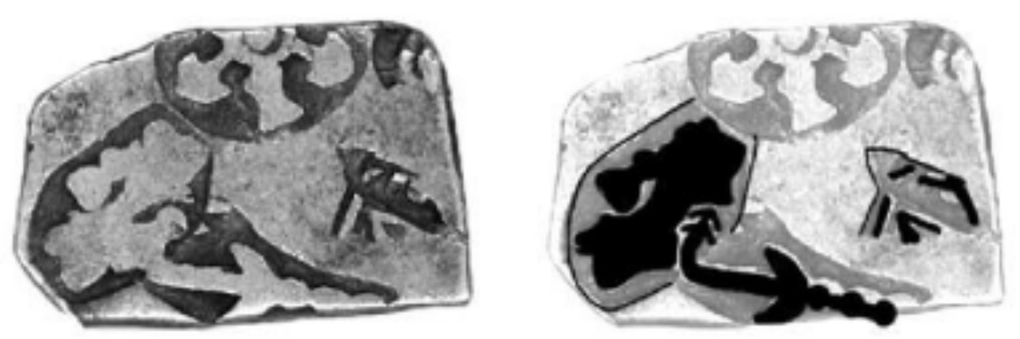
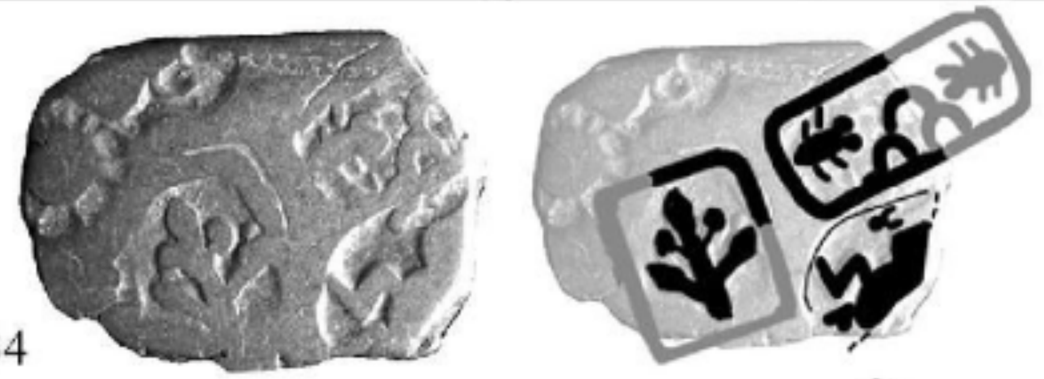
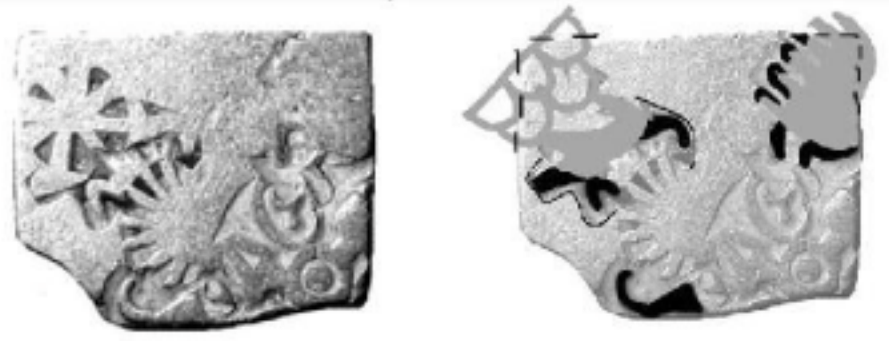
[1] This coin is part of a large hoard discovered in 2013 too late to be included in its entirety here. I am grateful to Govind Agrawal for alerting me to it. The hoard appears to contain more new types and will be published as a separate monograph.



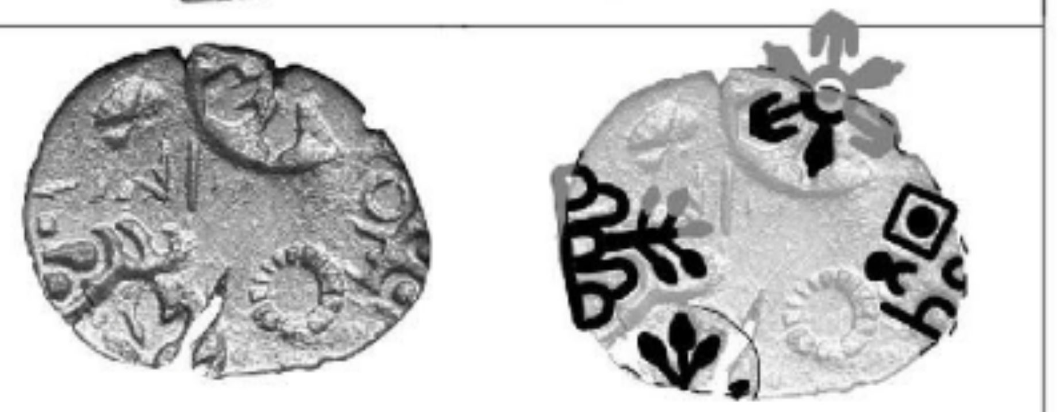
U33



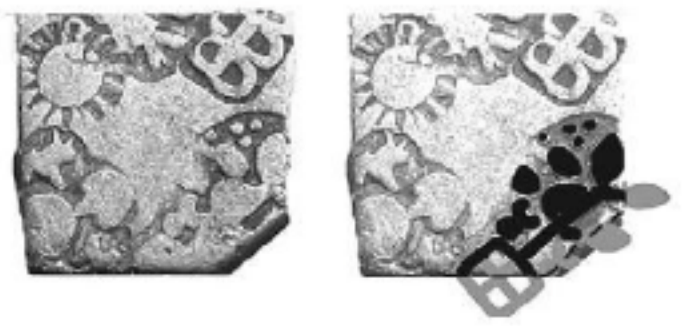
U34



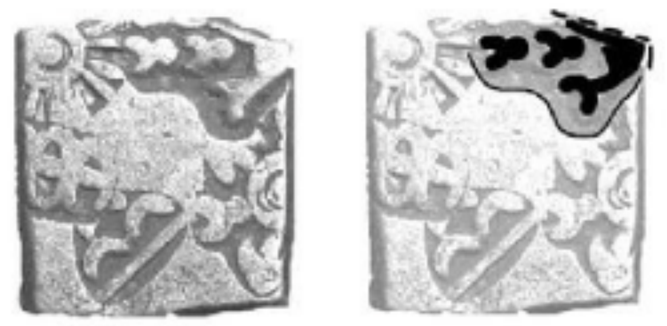
U35



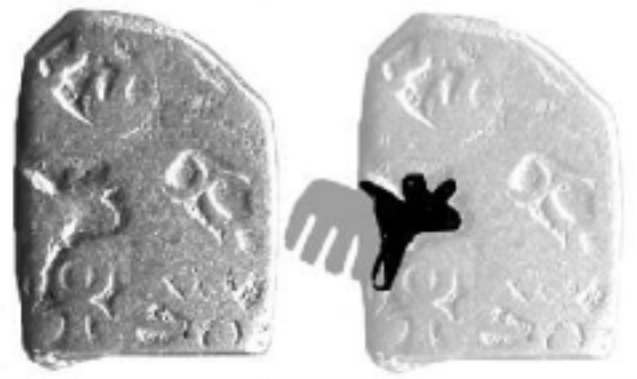
U36



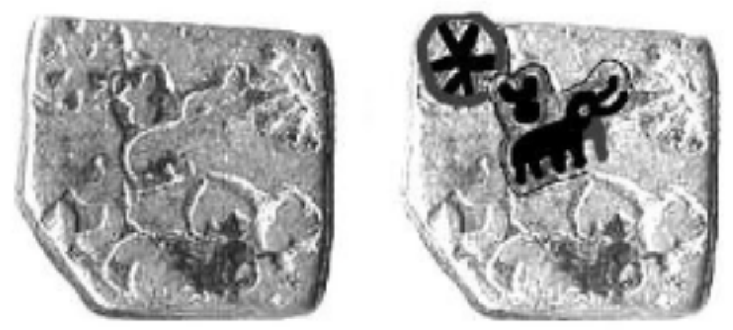
U37



U38



U39



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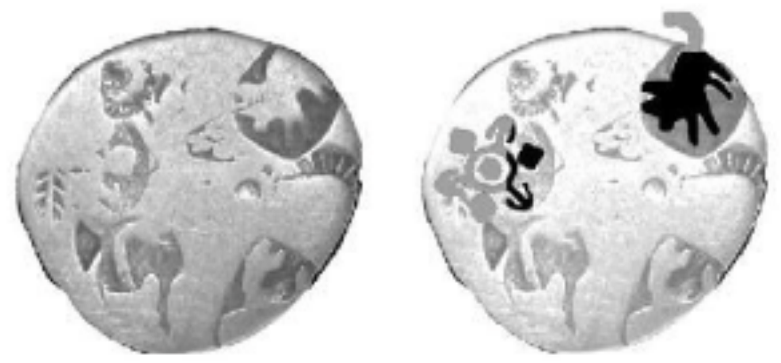
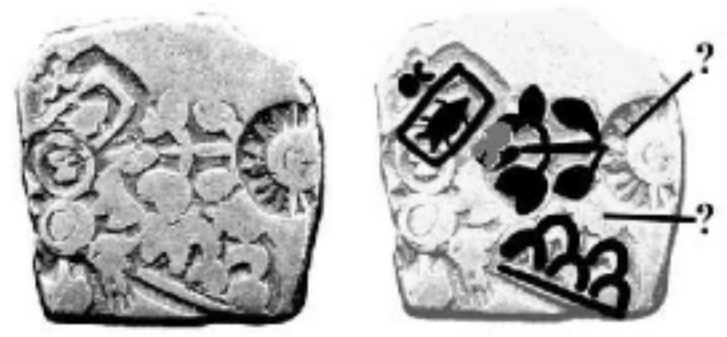


U41

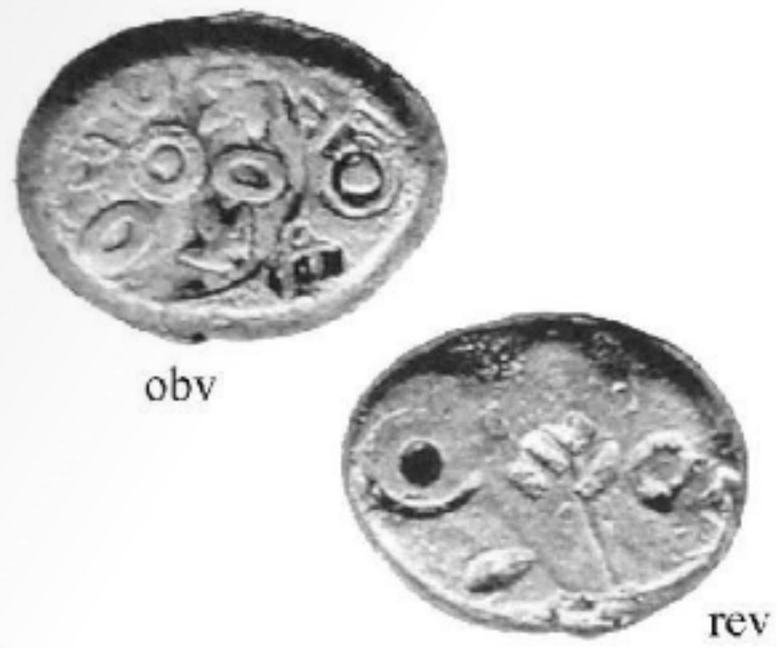


U 42

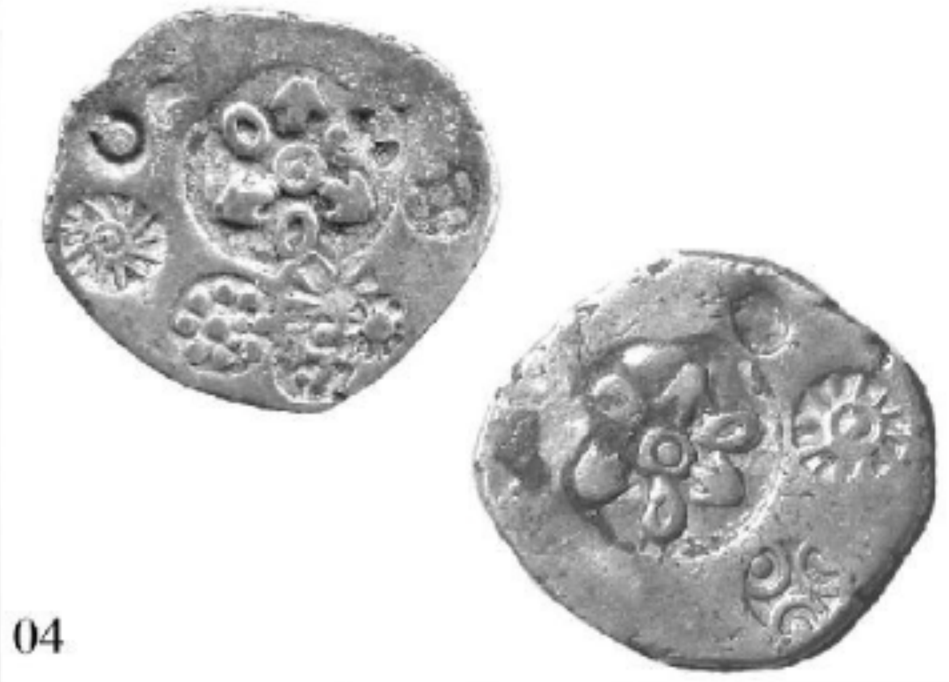
# Enlarged photos

This section shows photographs of selected types from the main Catalogue that display problematic identification, or are of special interest, enlarged approximately x 2.5. They are normally enlargements of the same coins in the Catalogue but occasionally alternative or additional coins (two in one box) are included to help identification of difficult symbols on types not commonly seen.

## ENLARGEMENTS SERIES 0



02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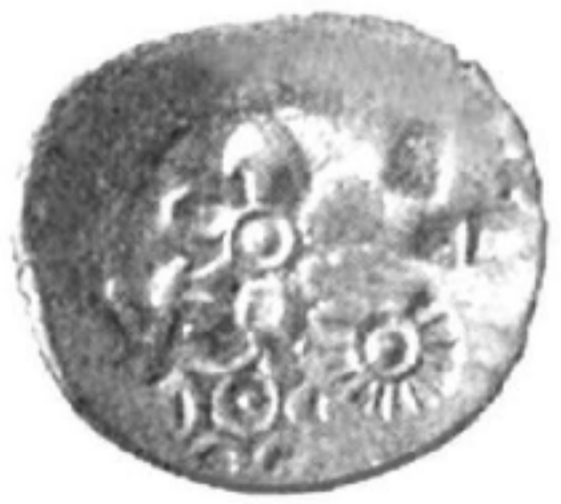
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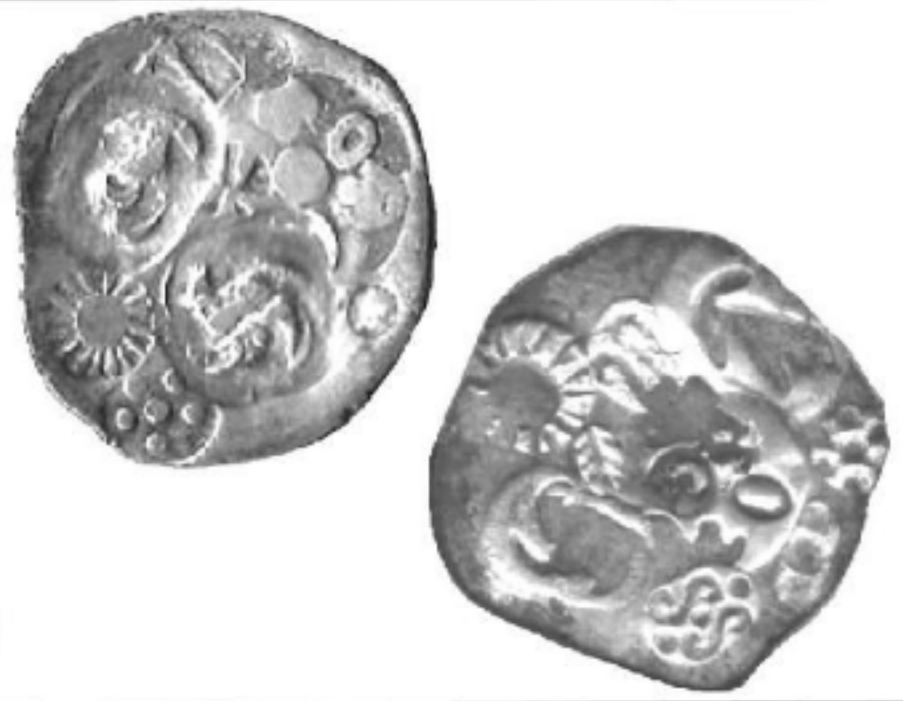
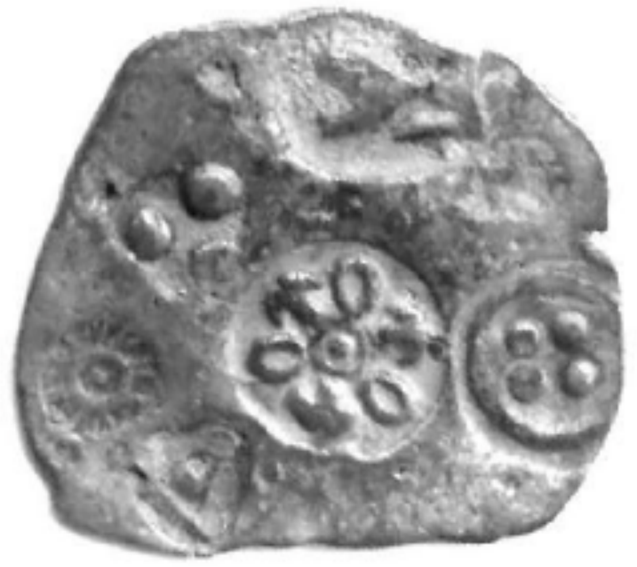

013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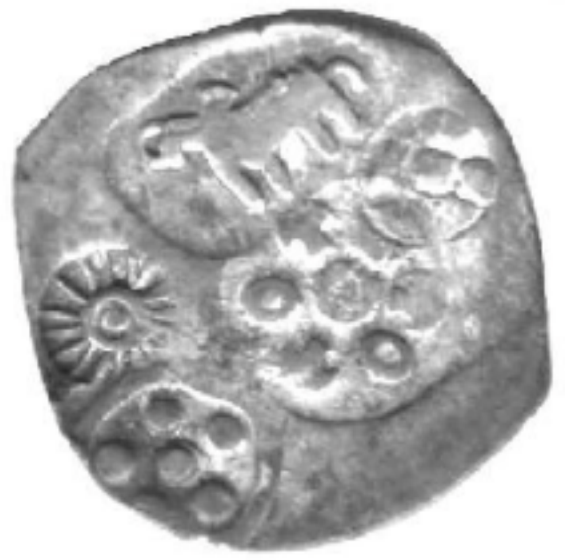
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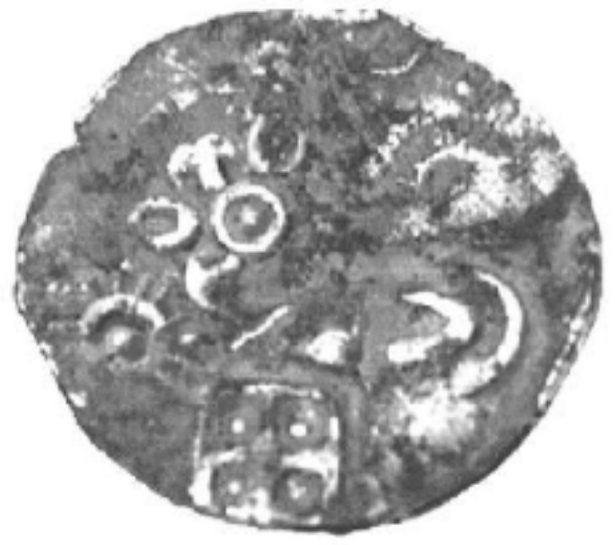
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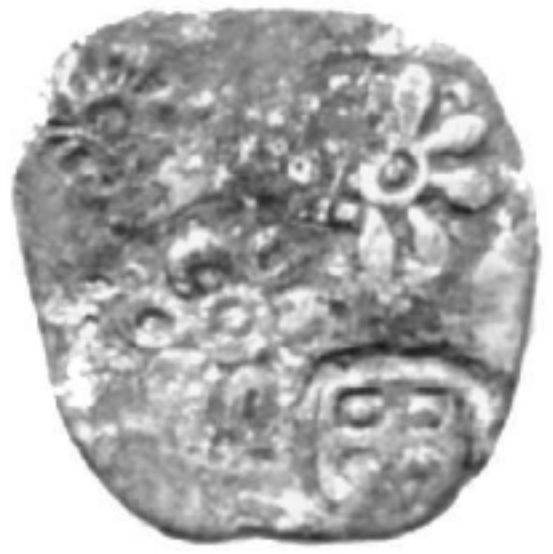
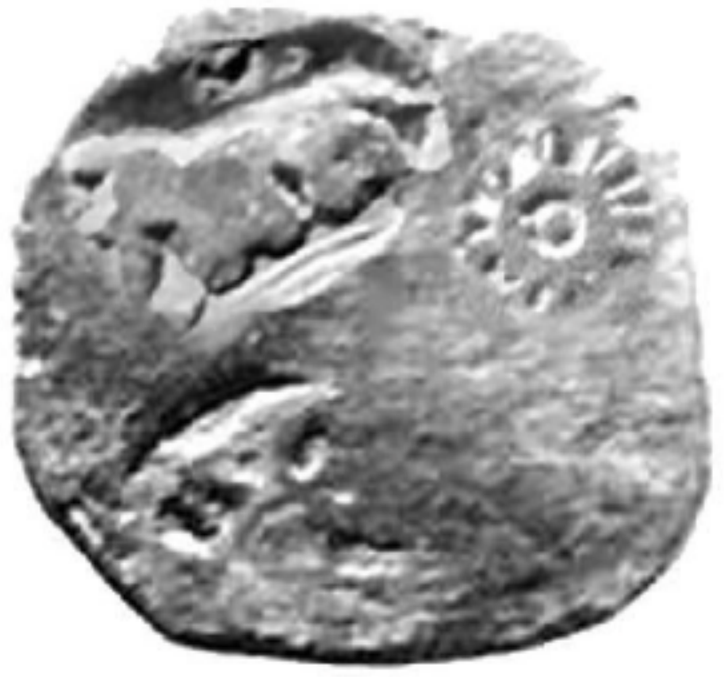

025

## ENLARGEMENTS SERIES I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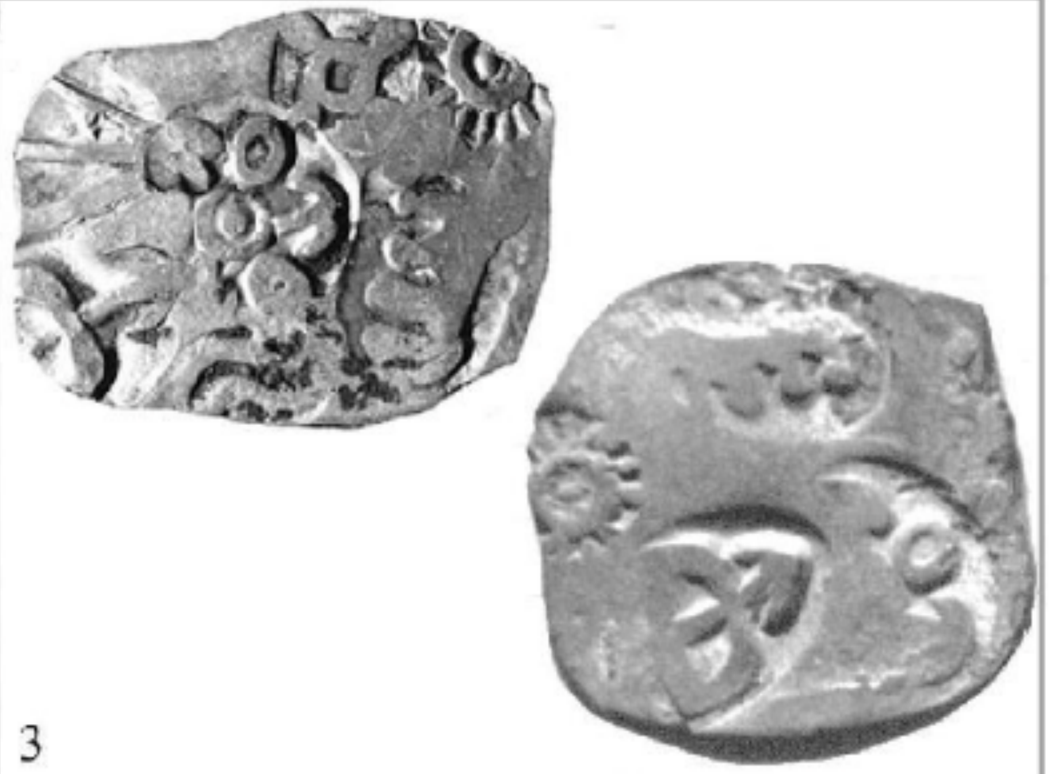
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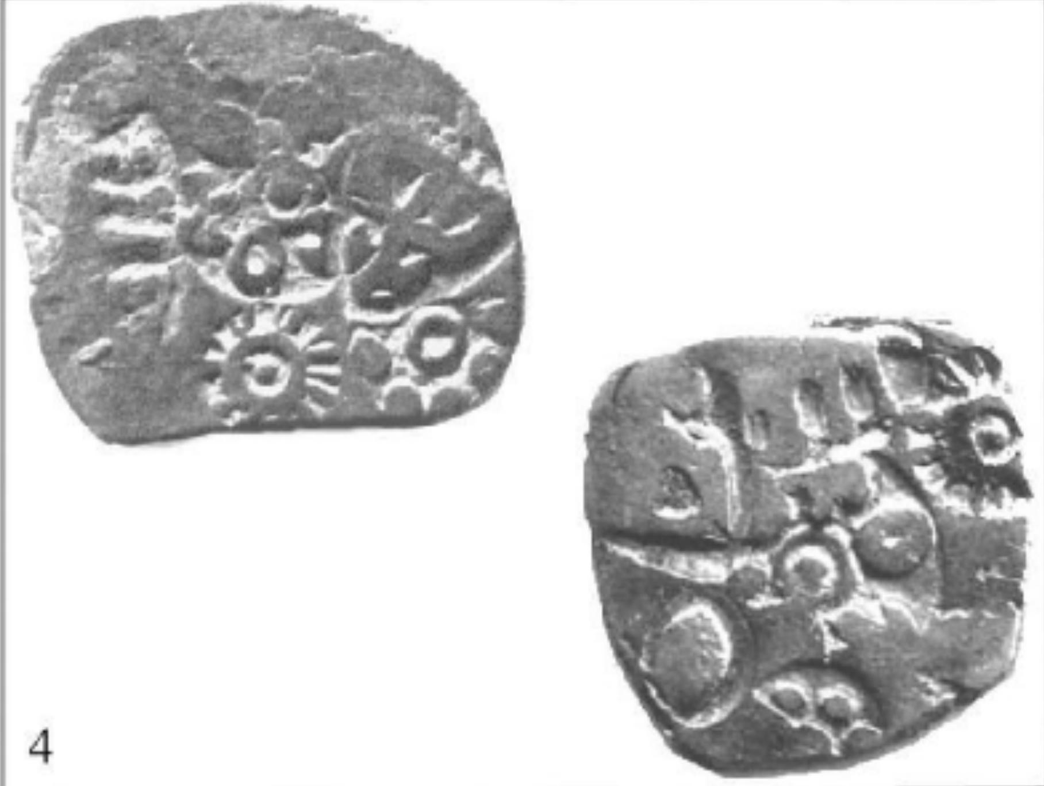
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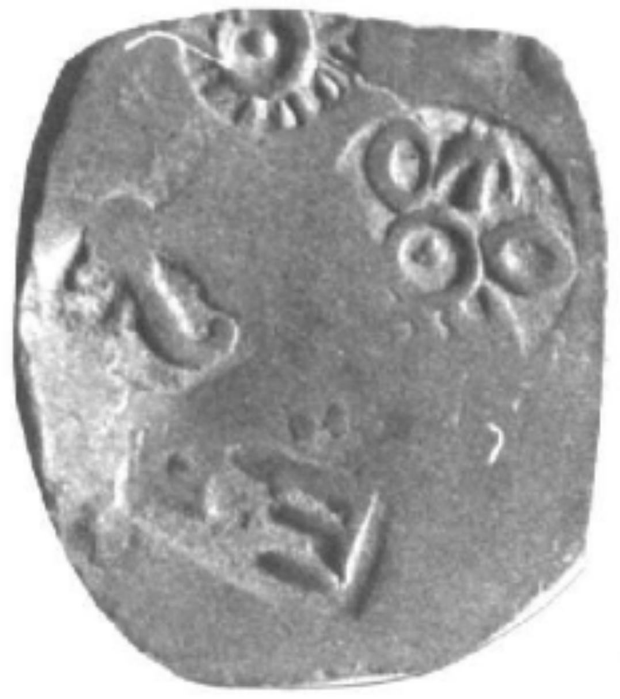
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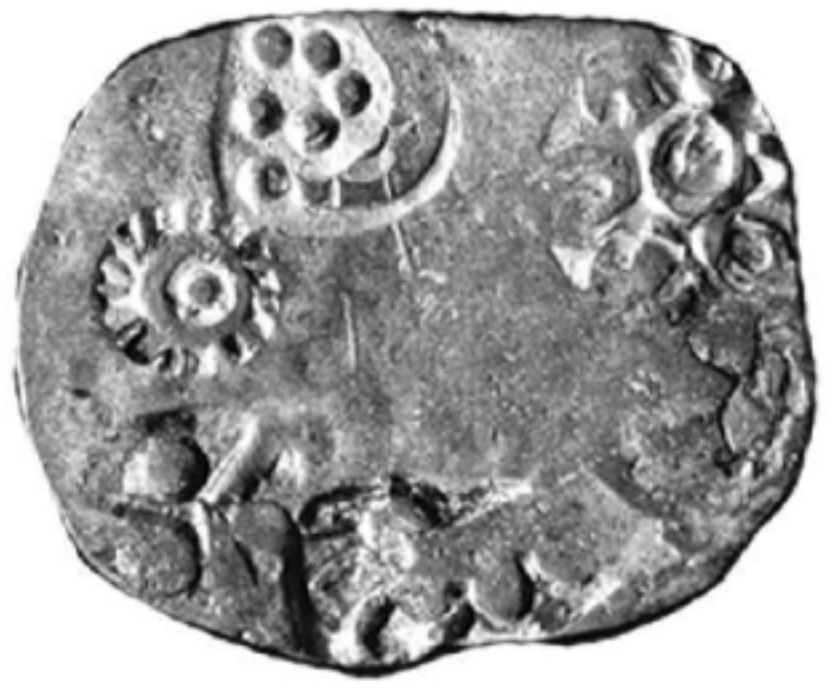
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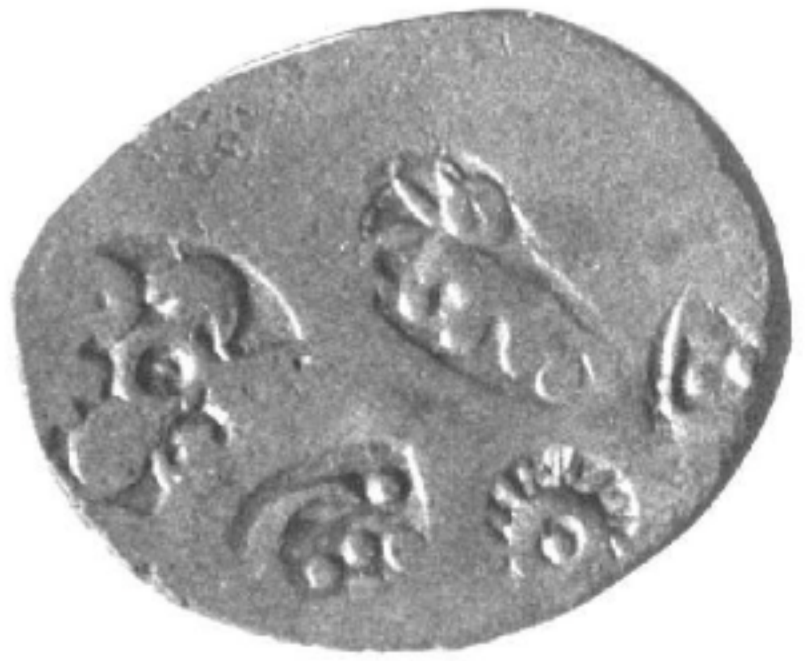
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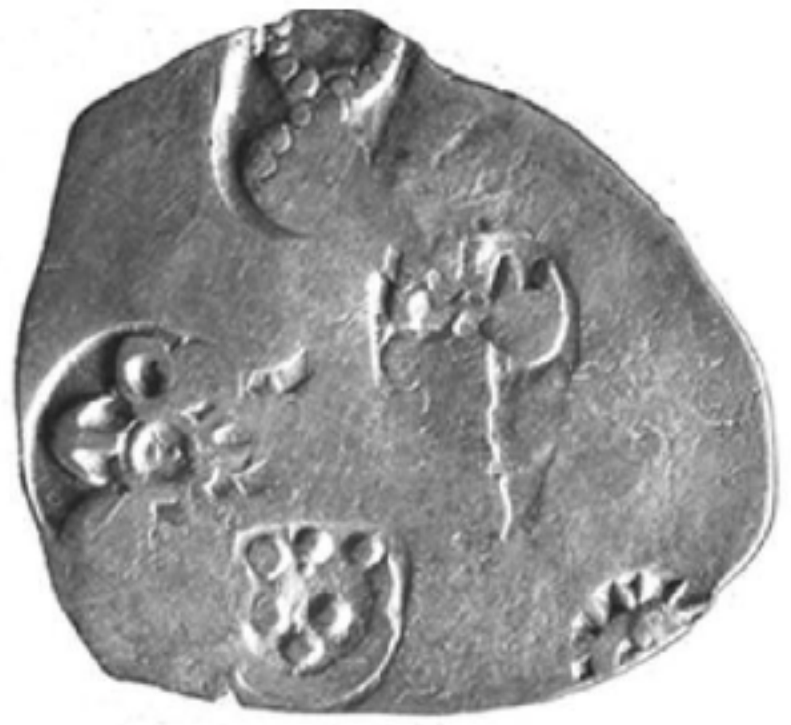
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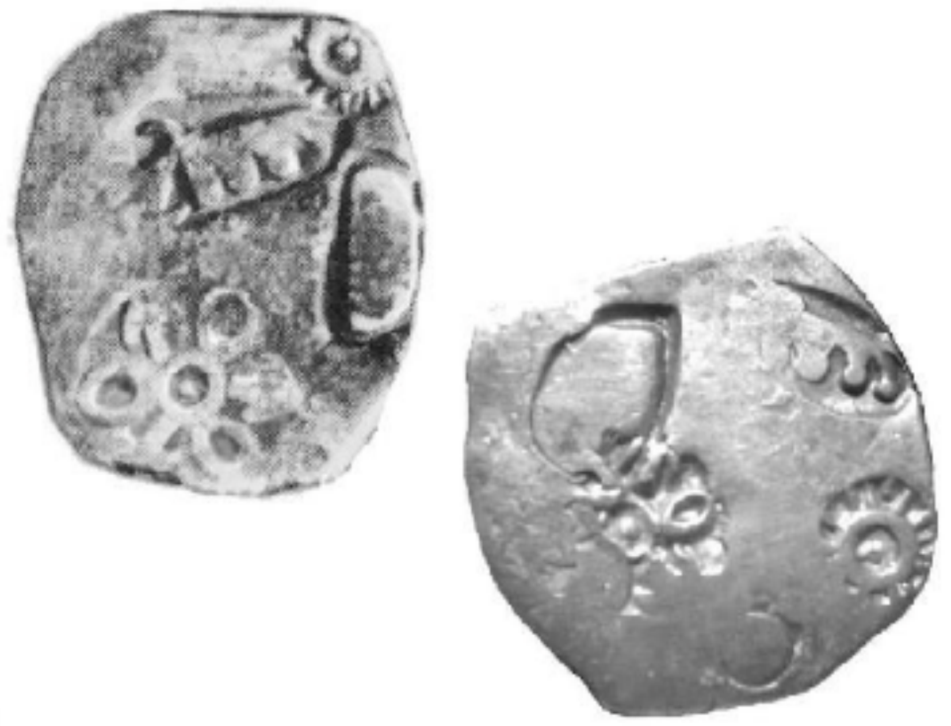
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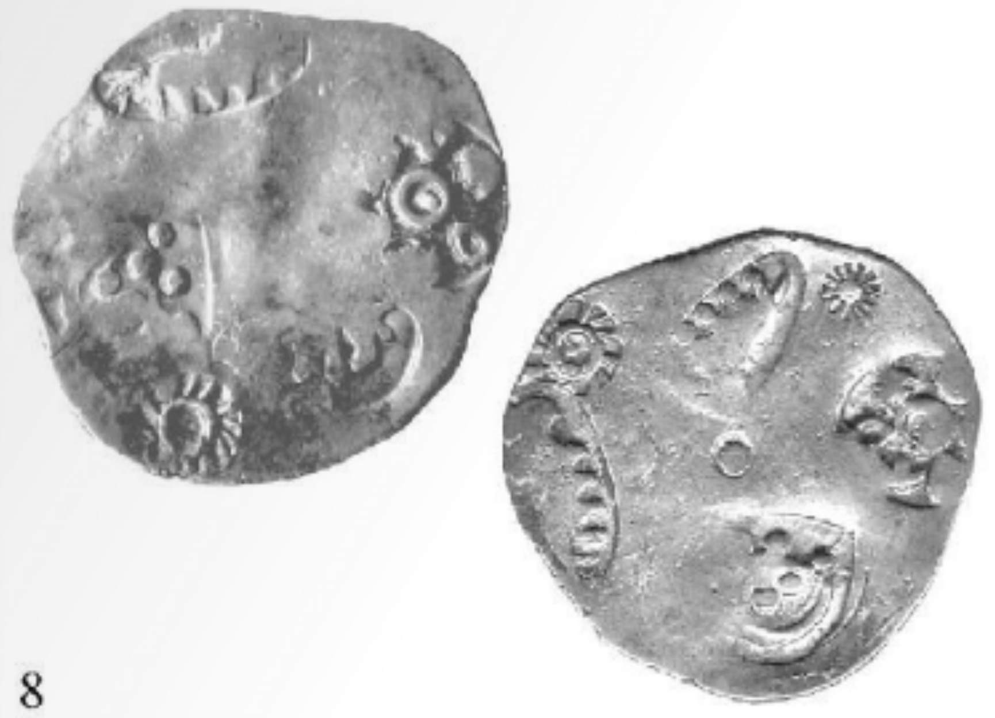
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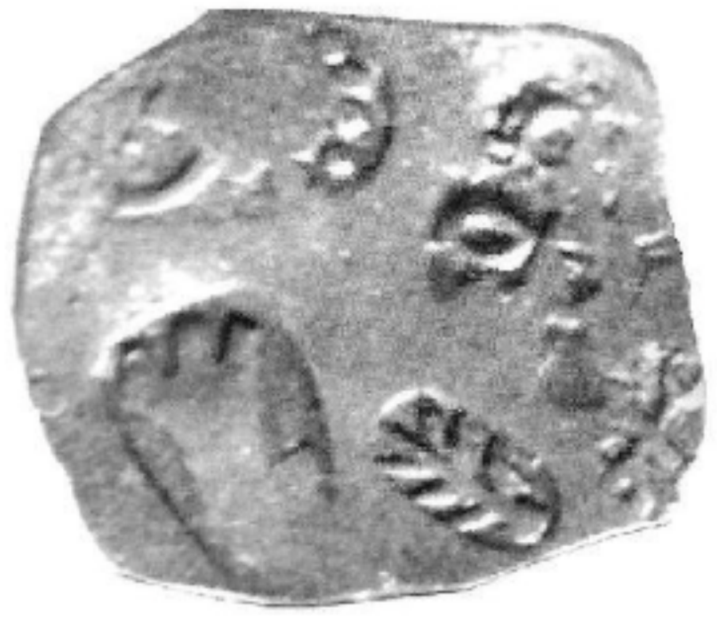
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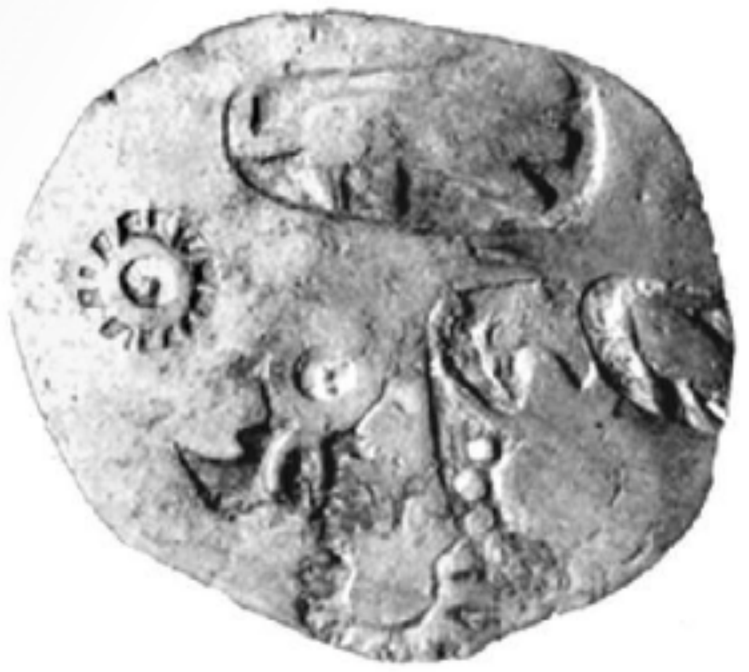
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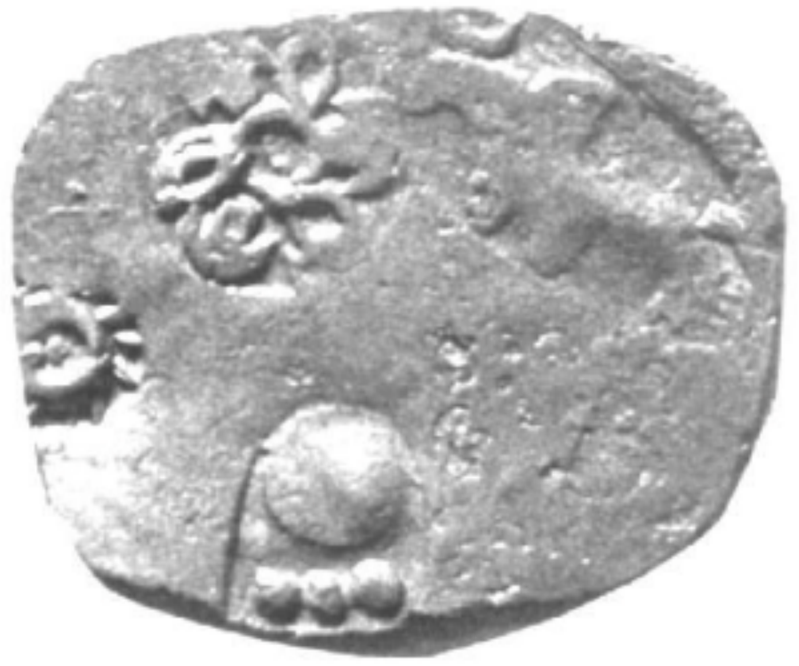
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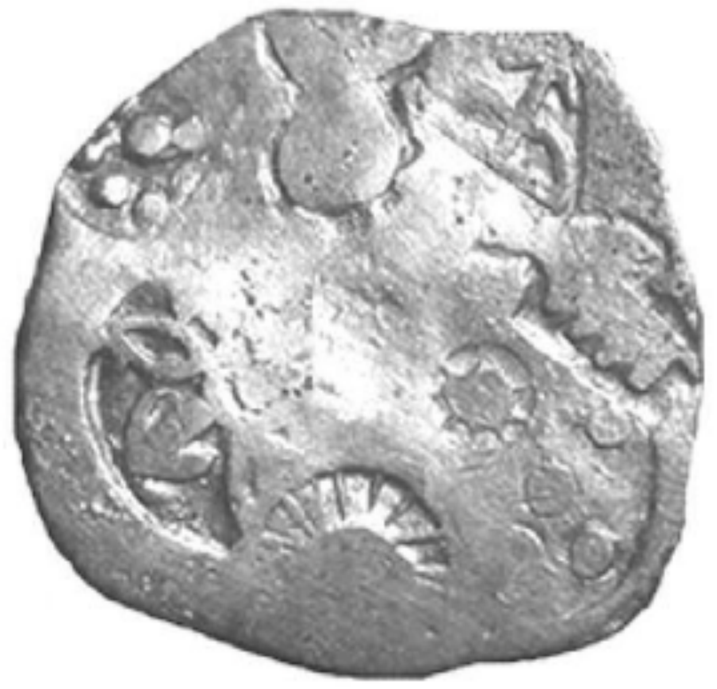
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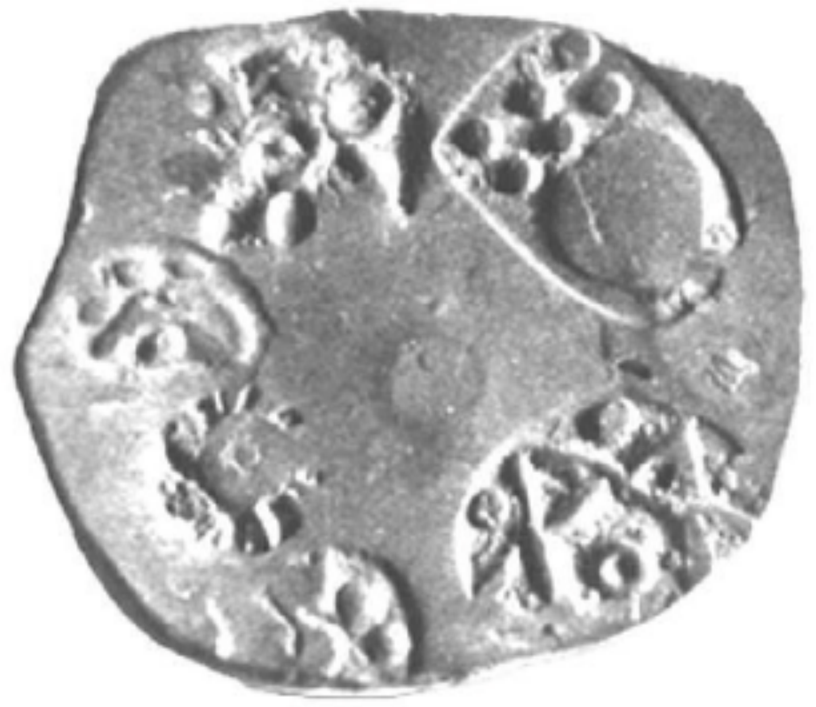
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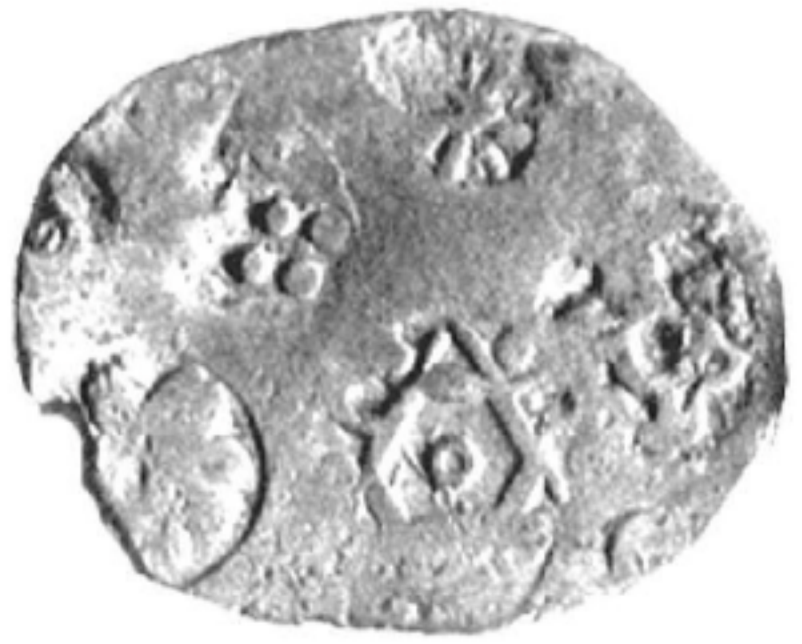
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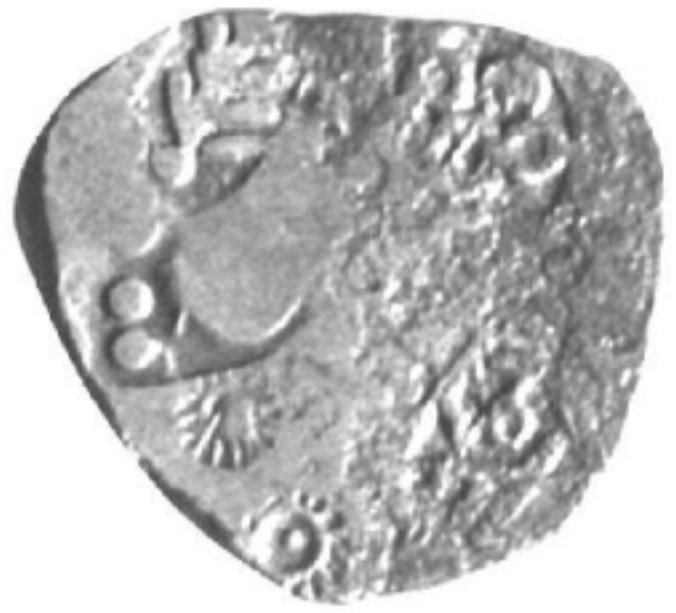
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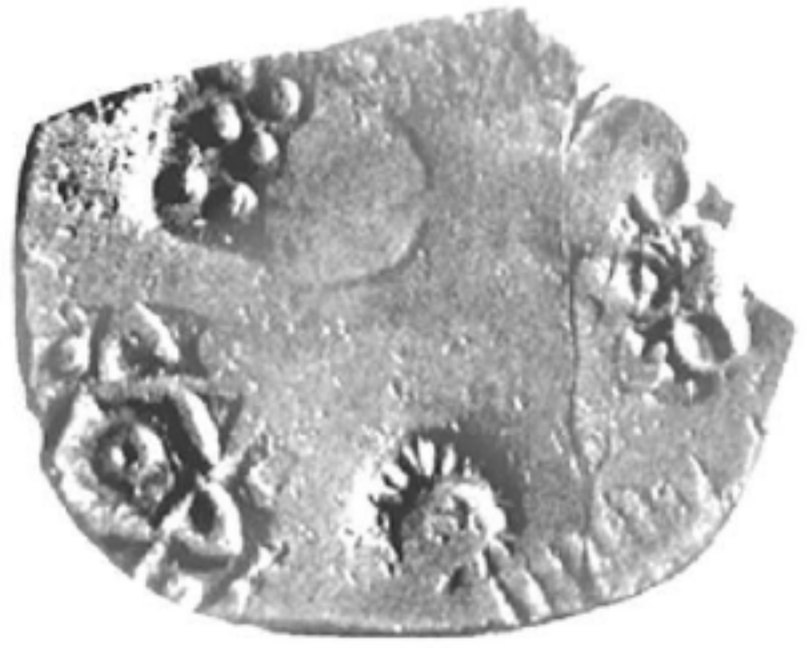
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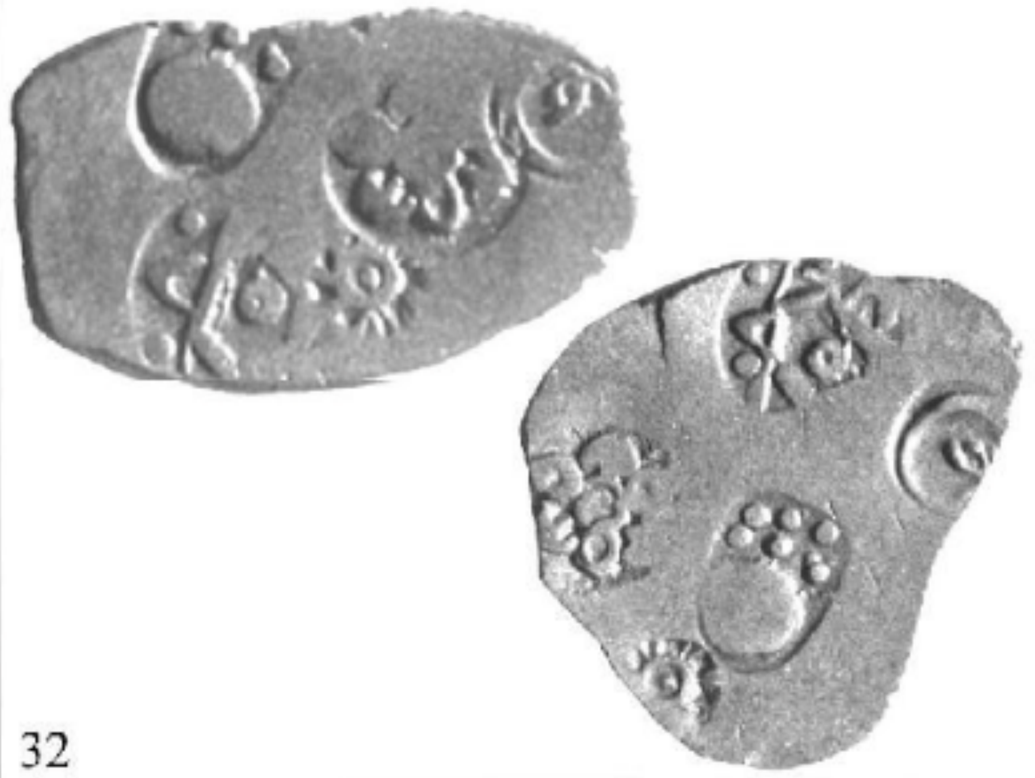
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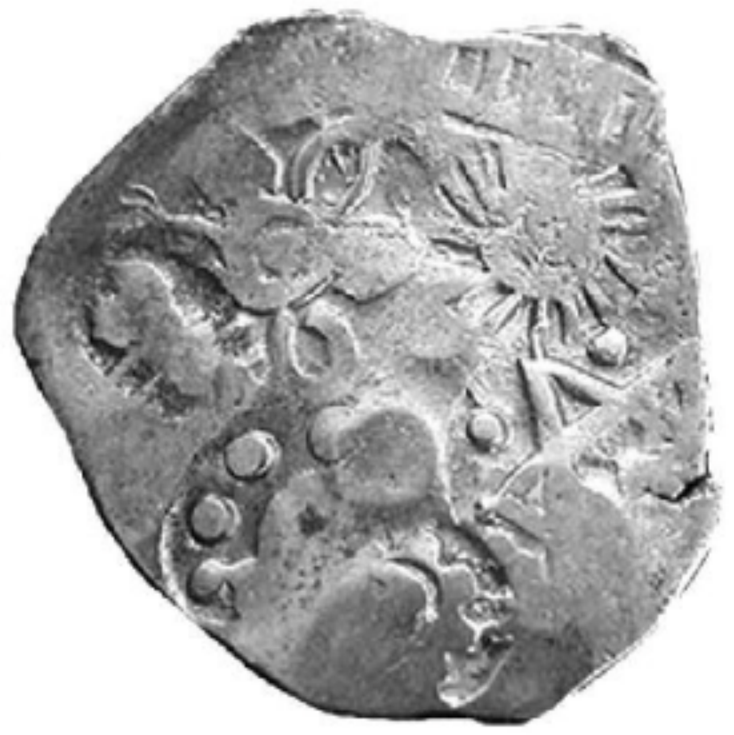
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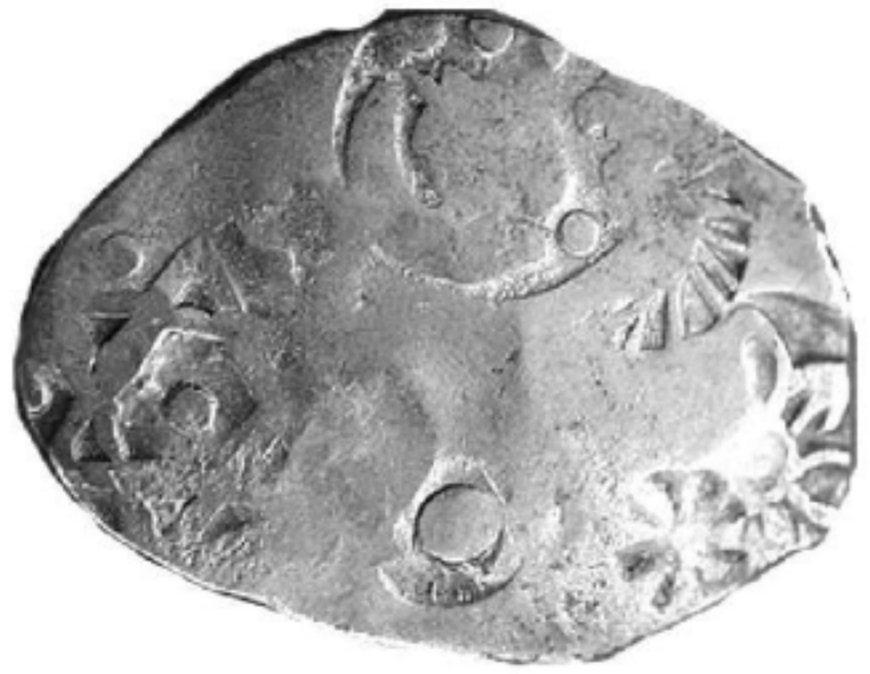
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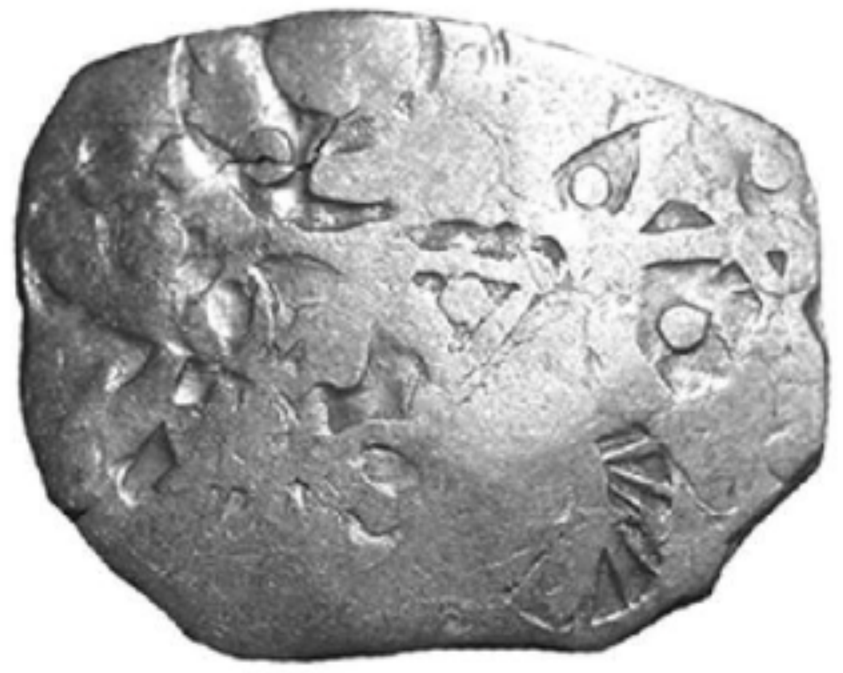
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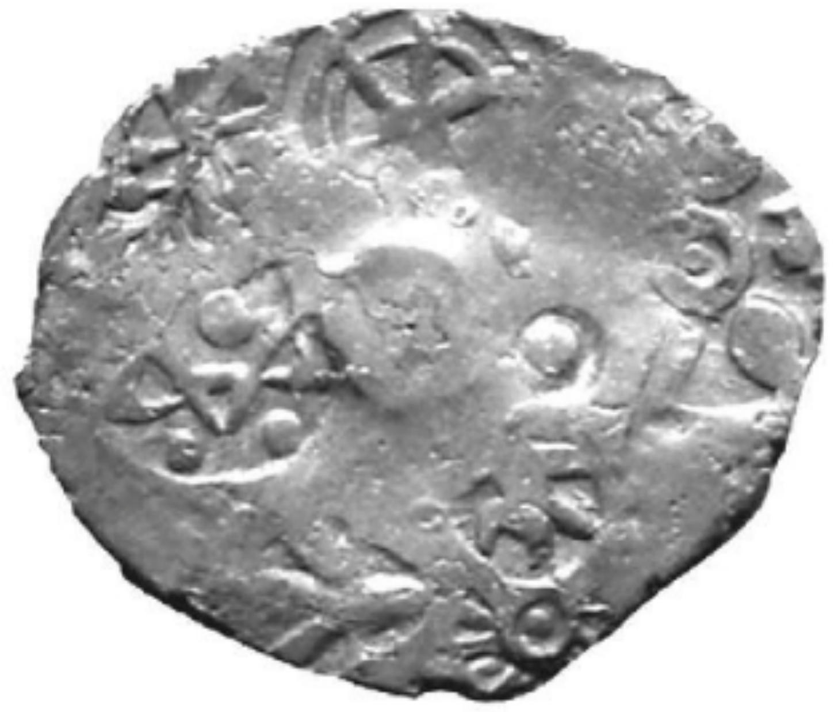
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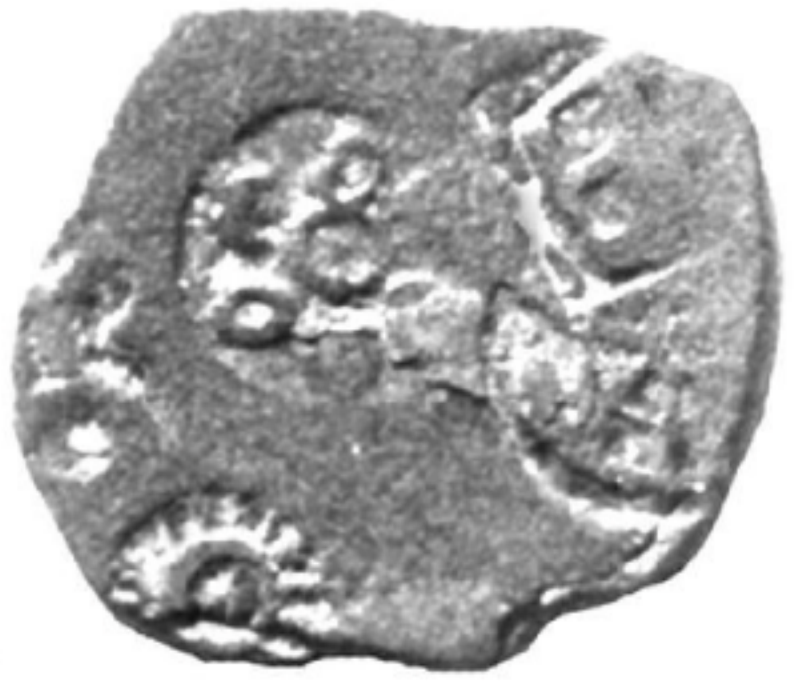
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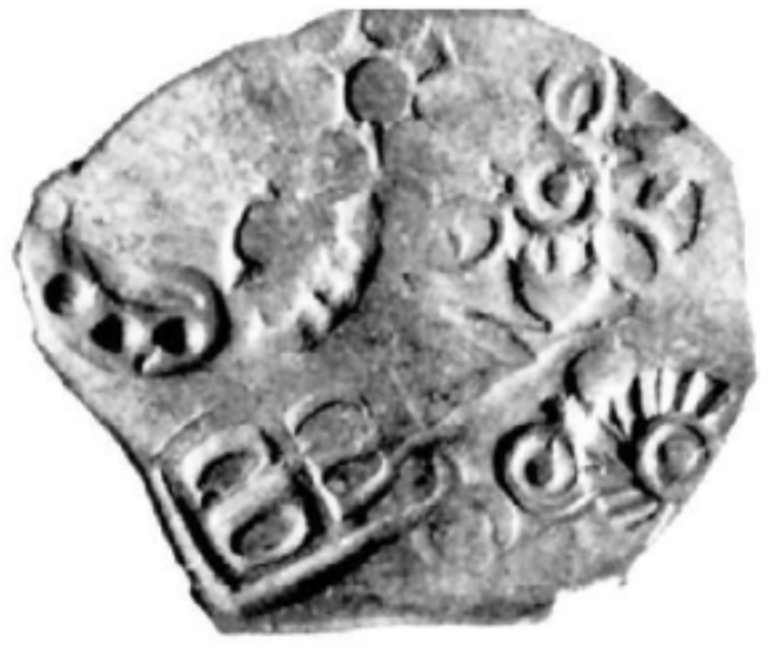
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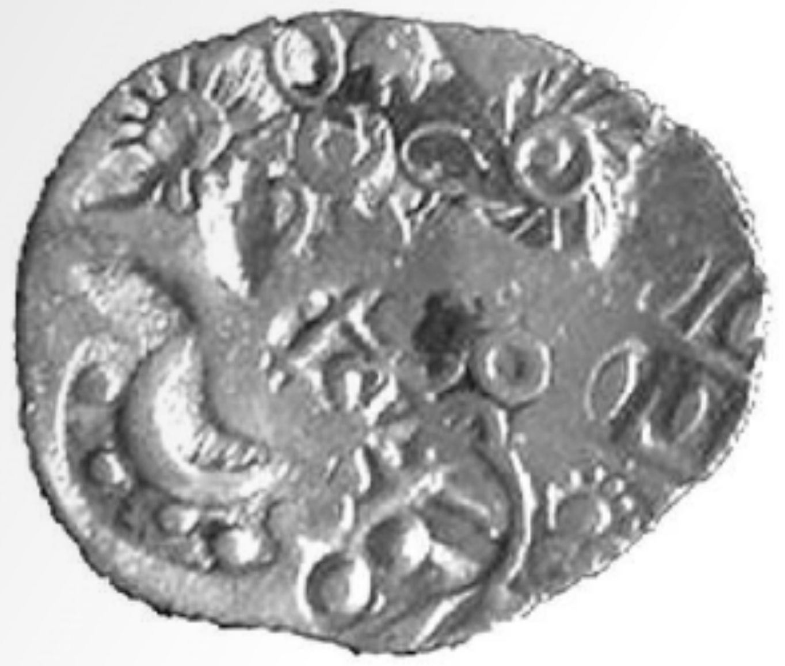
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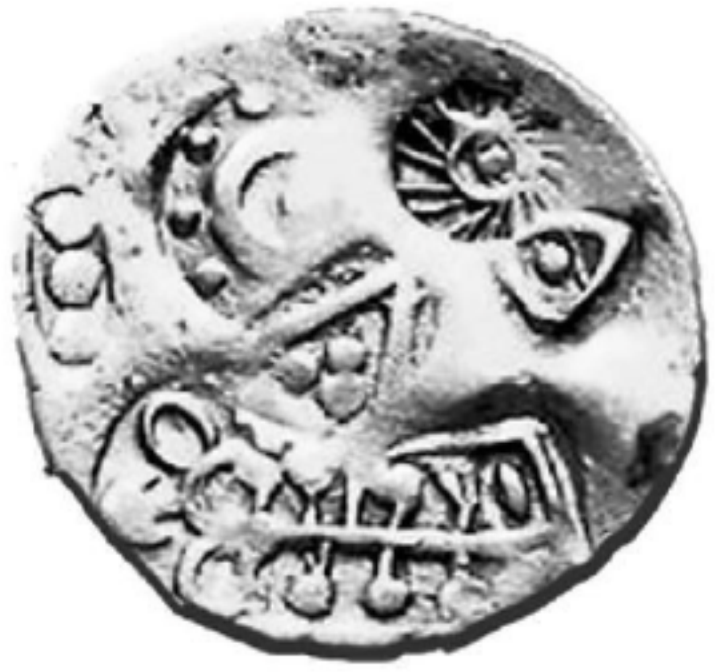
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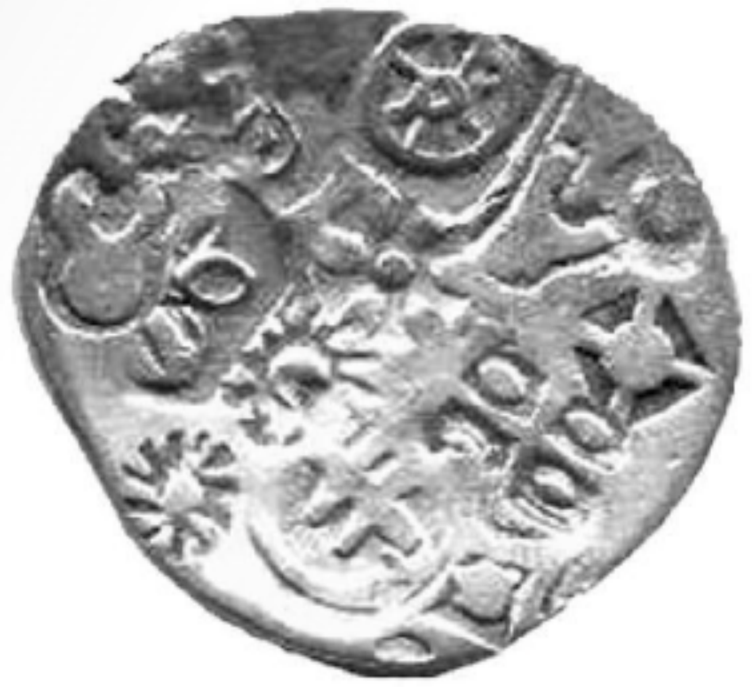
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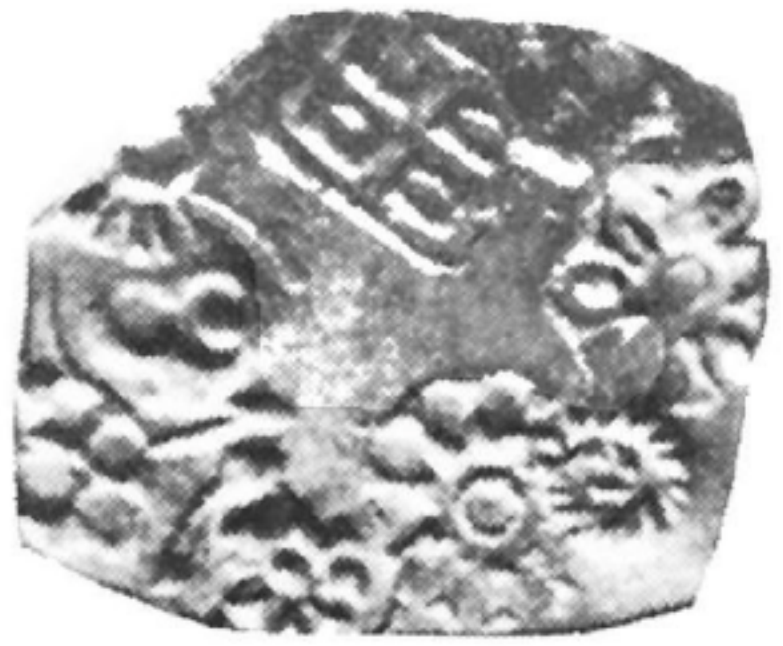
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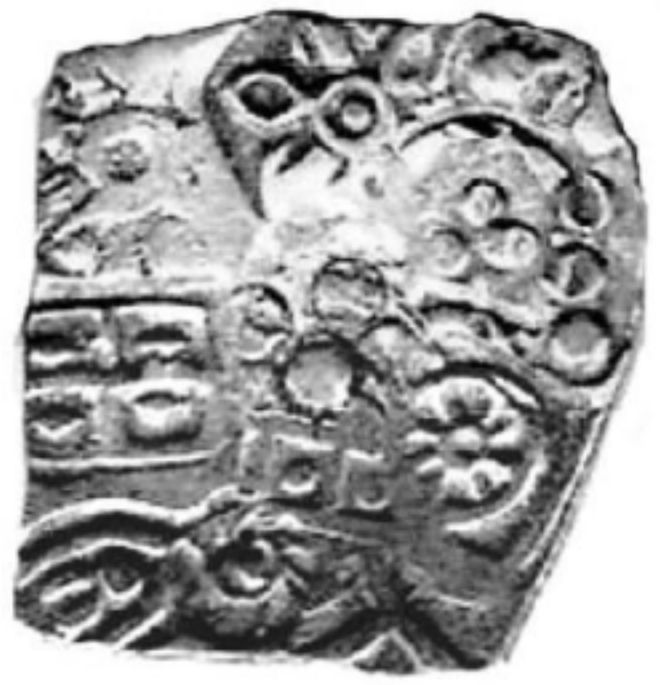
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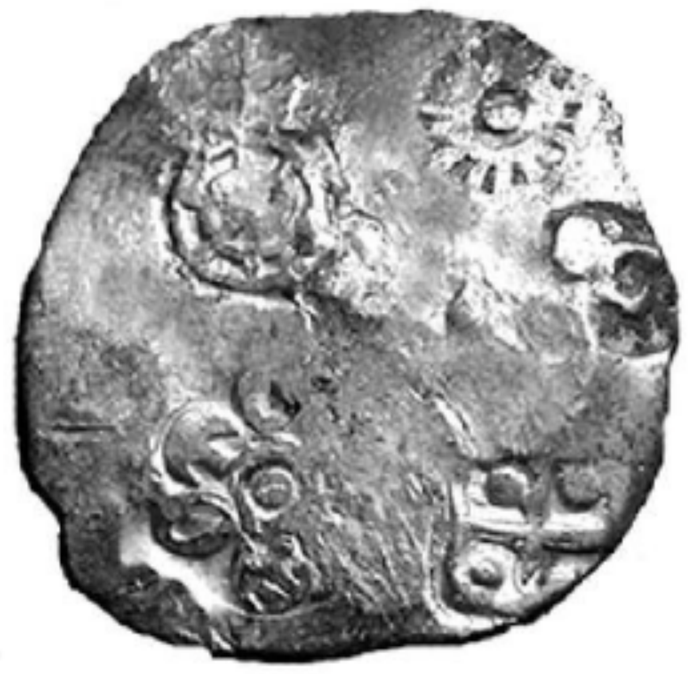
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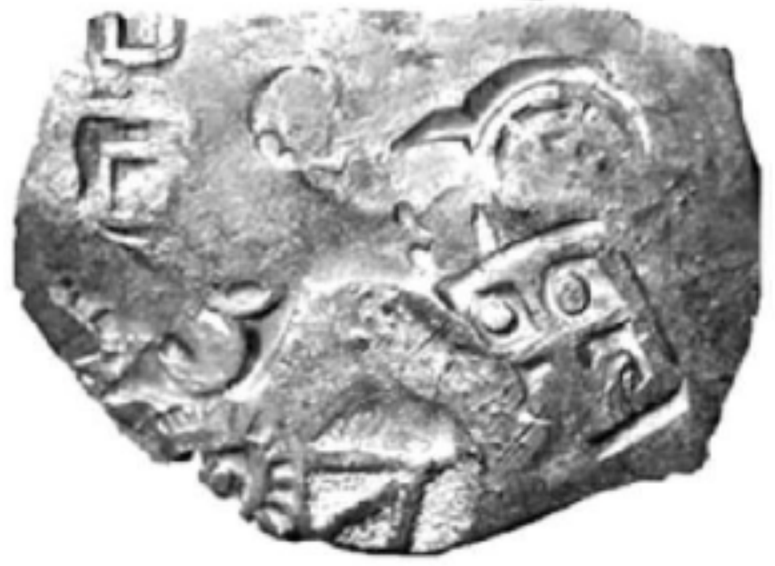
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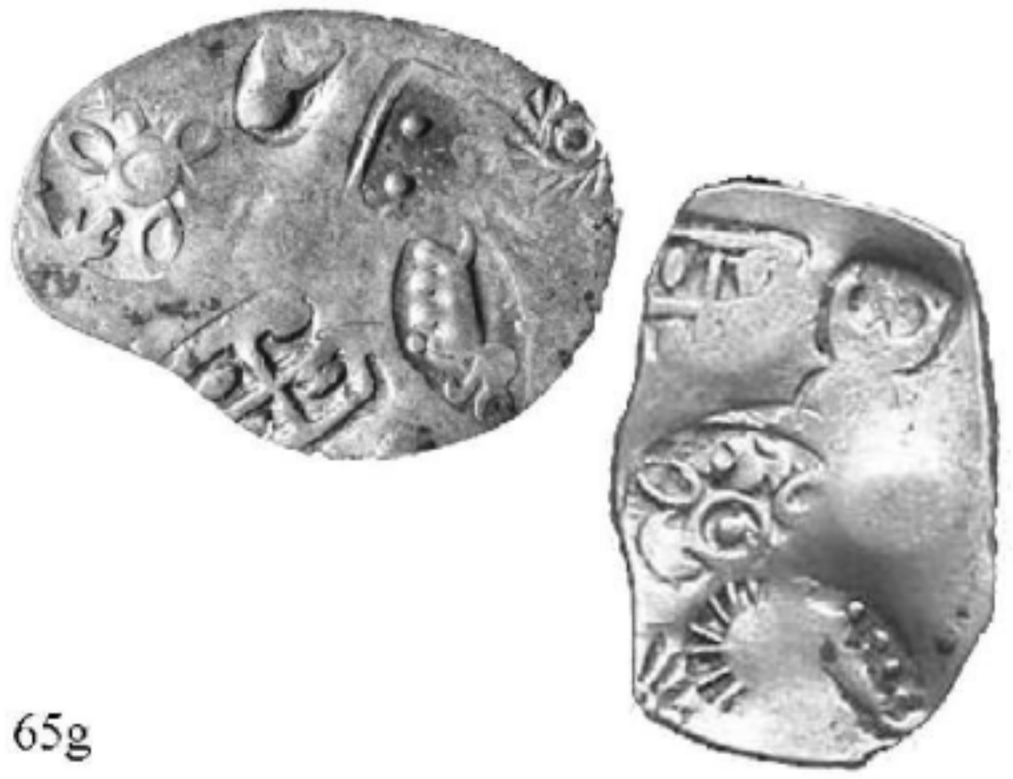
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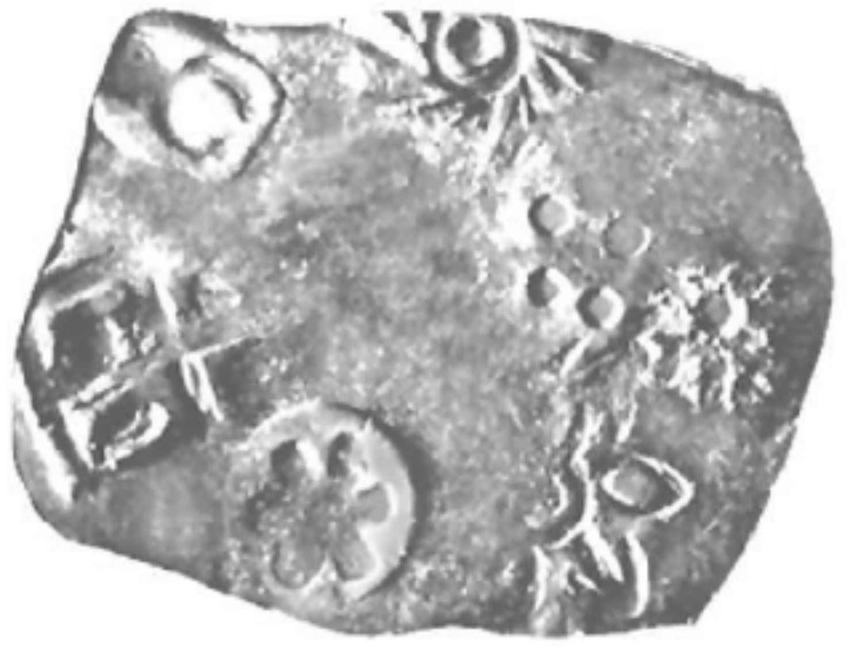
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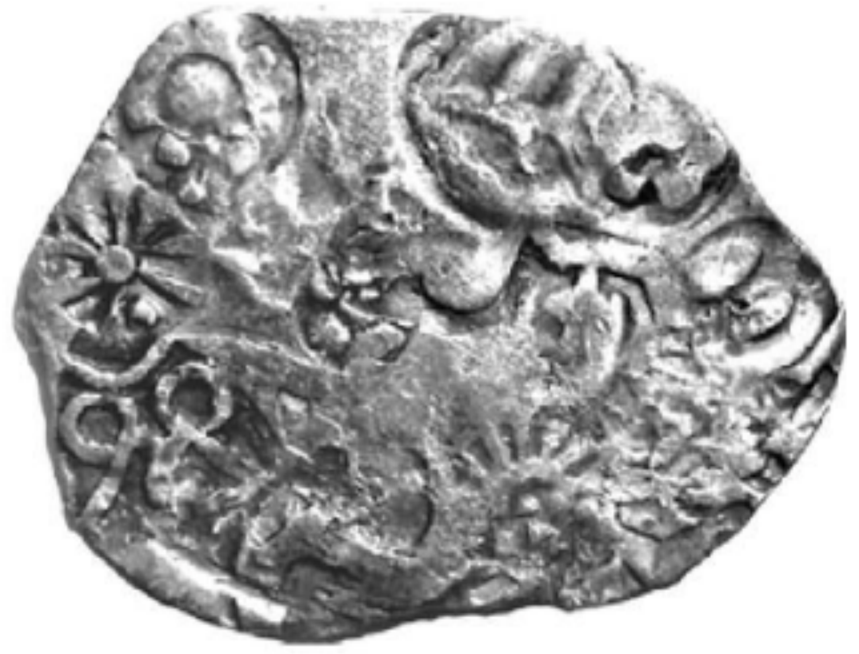
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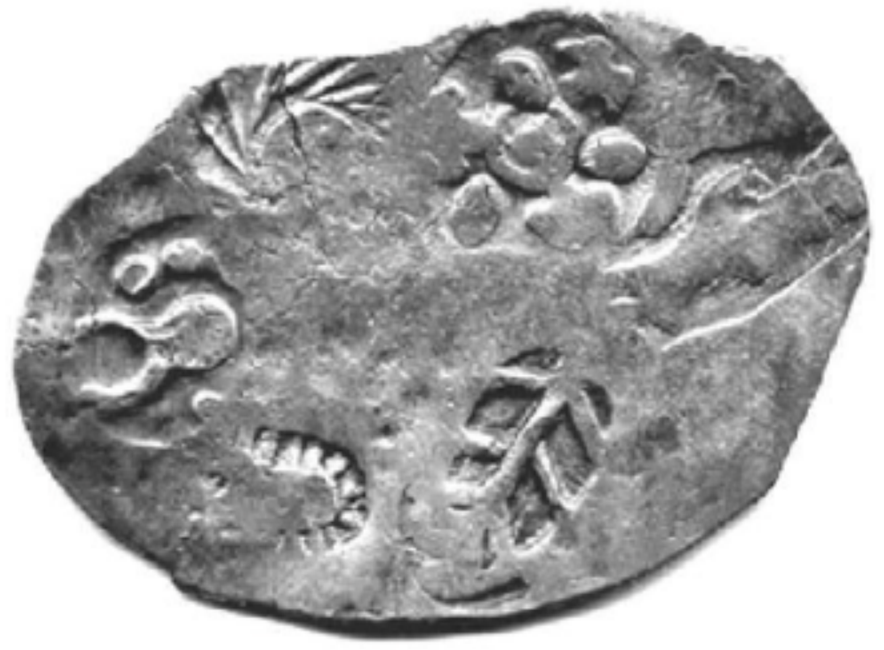
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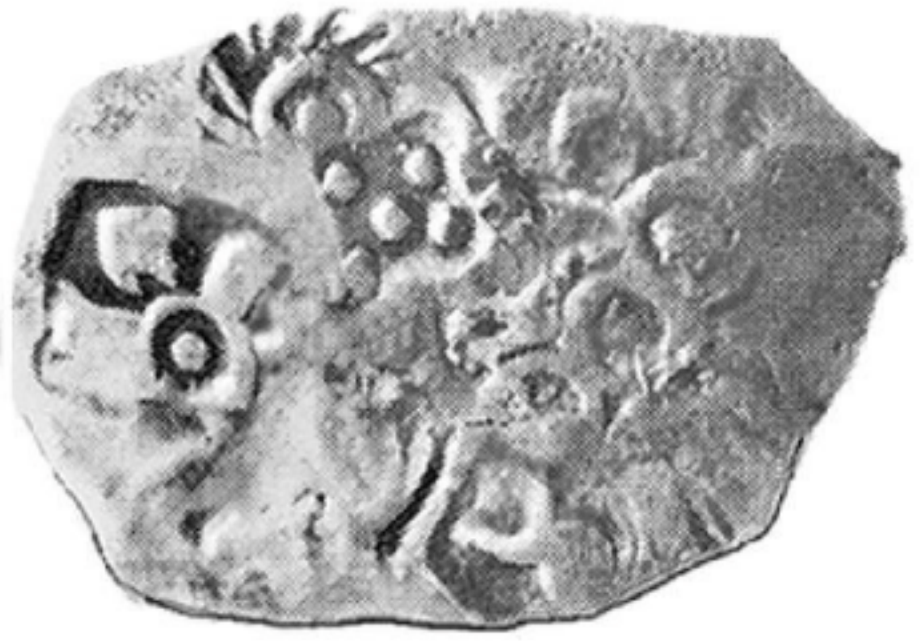
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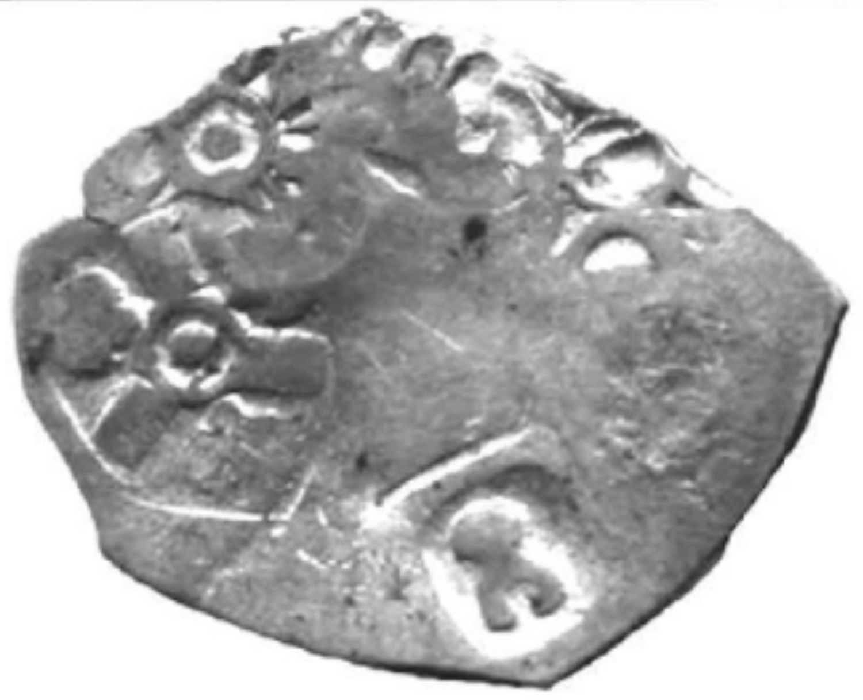
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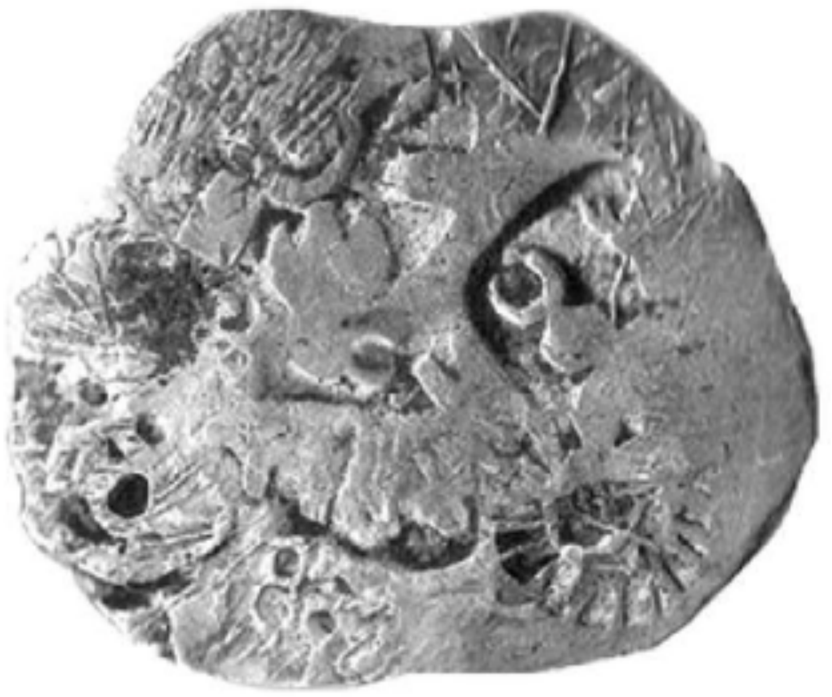
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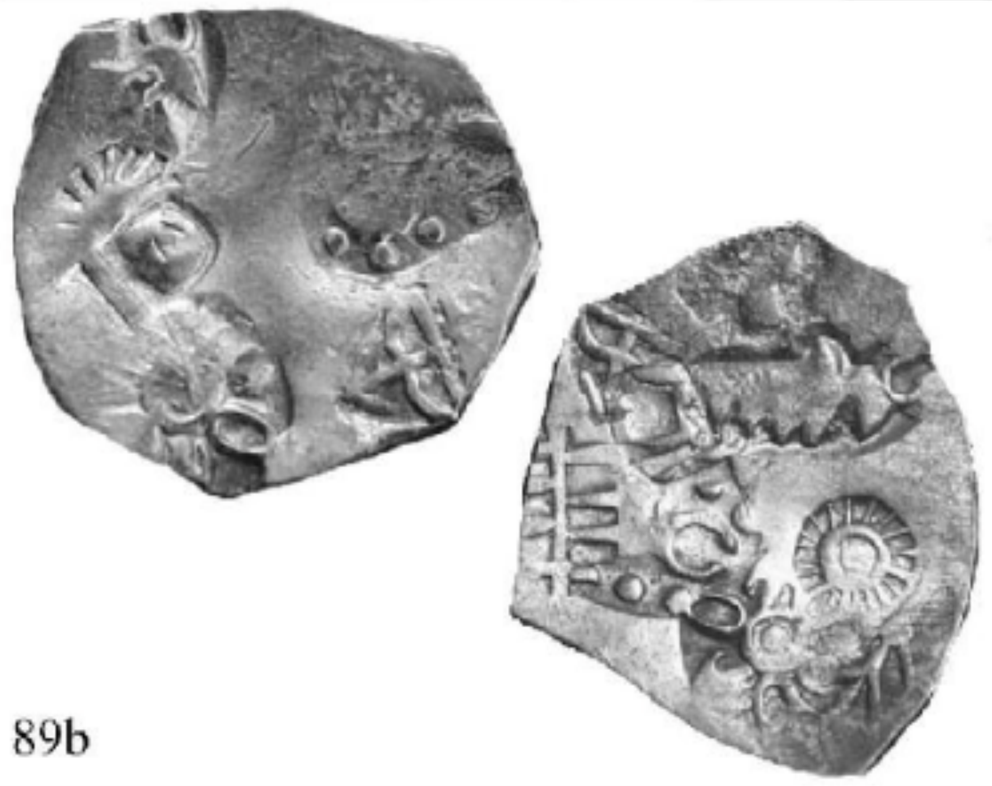
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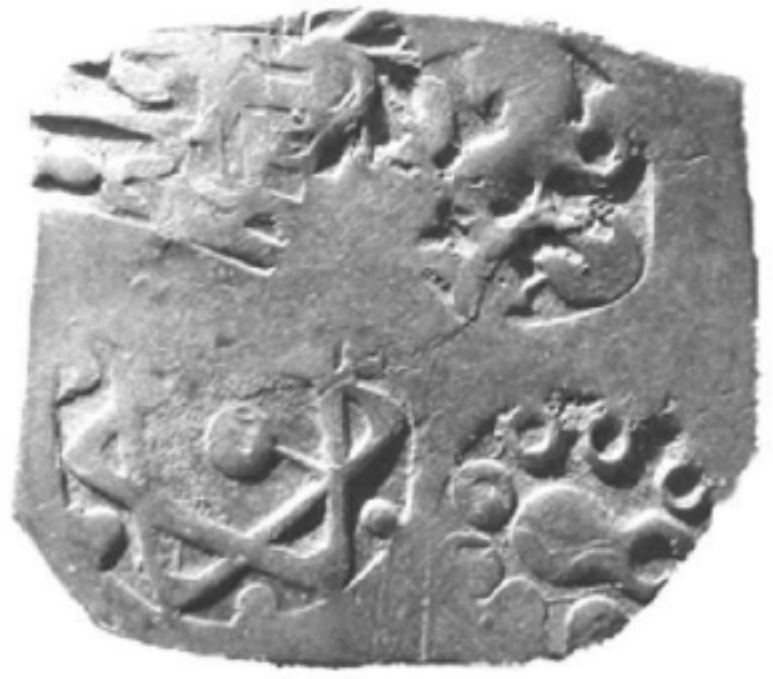
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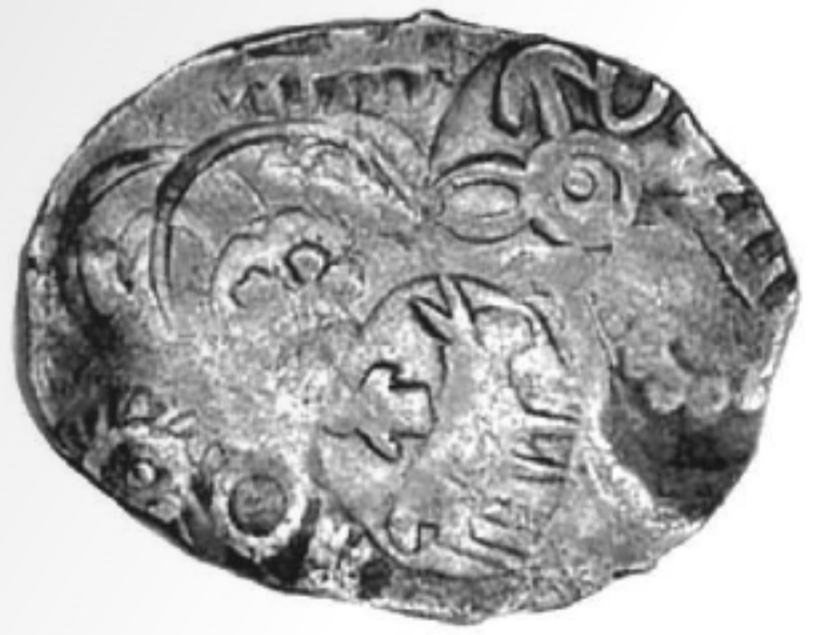
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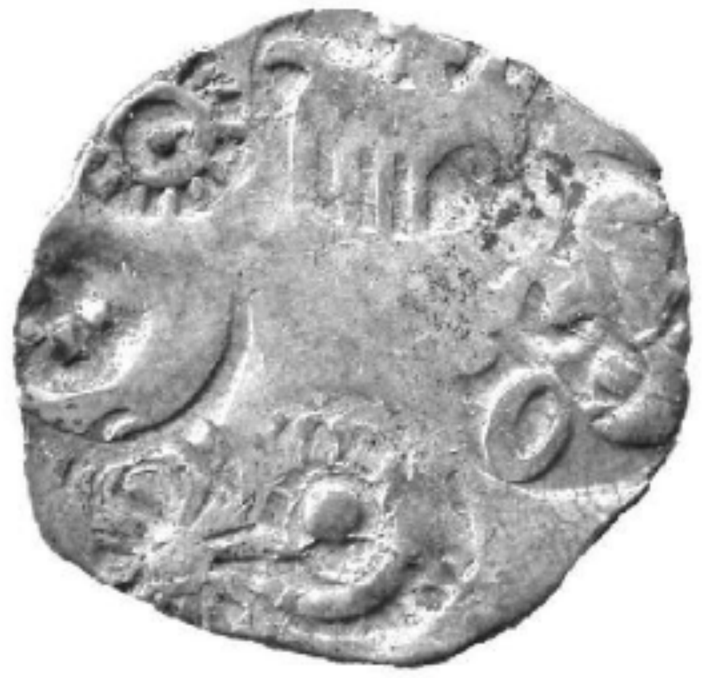
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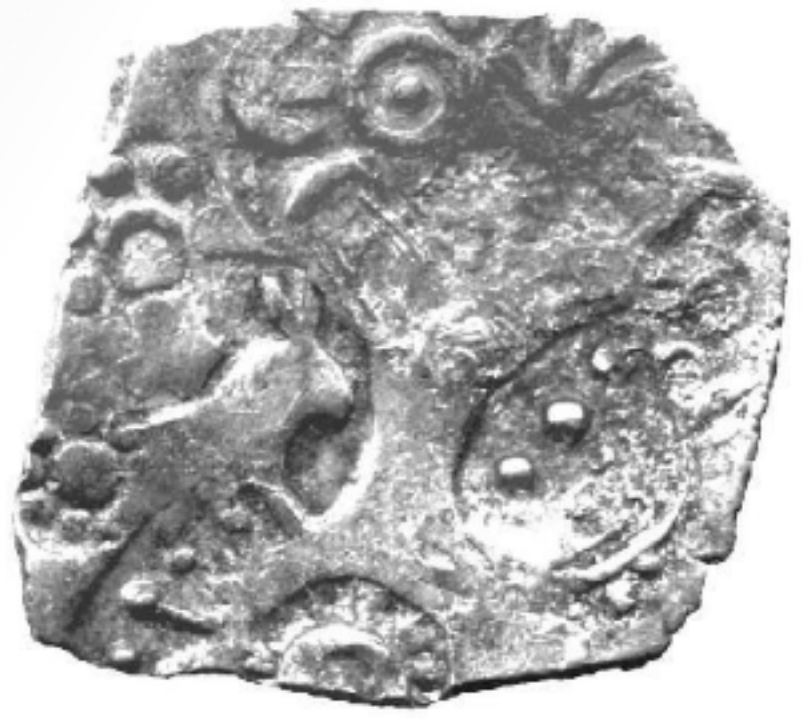
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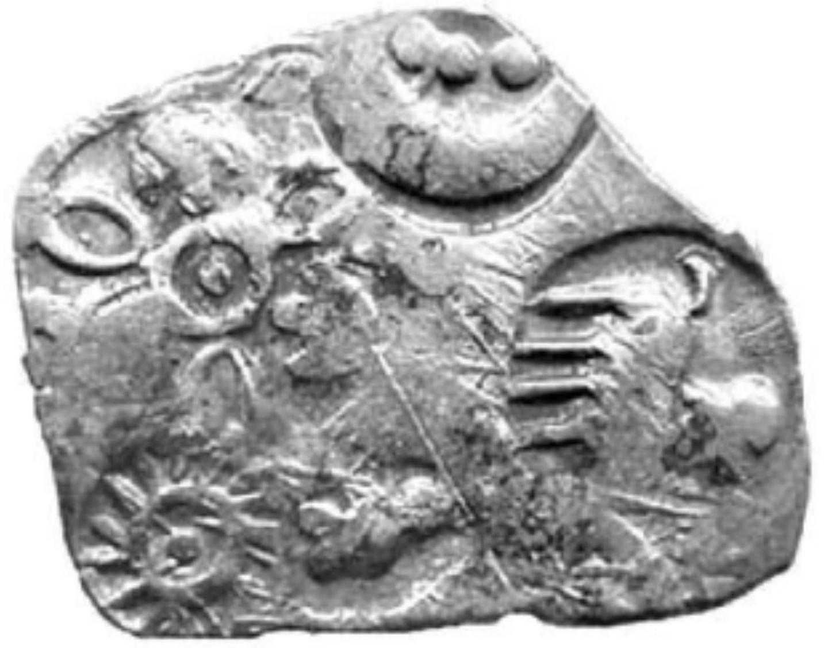
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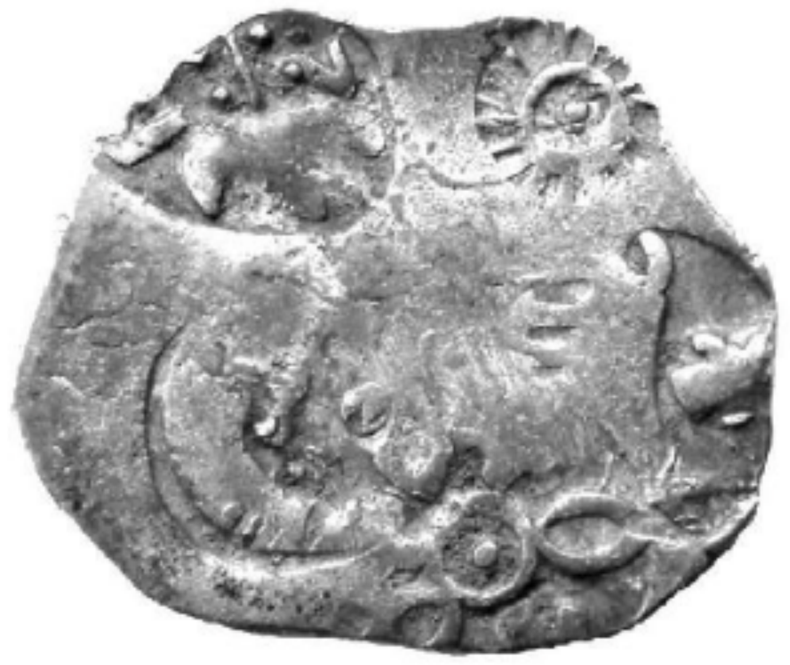
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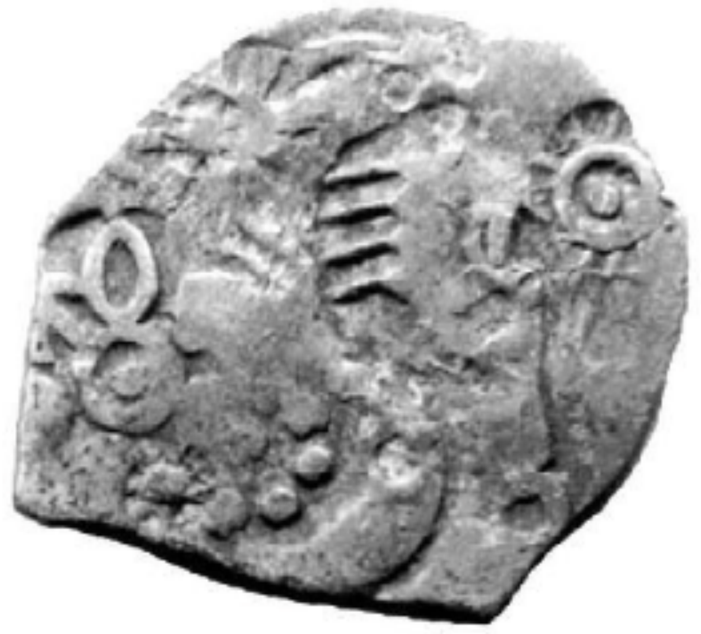
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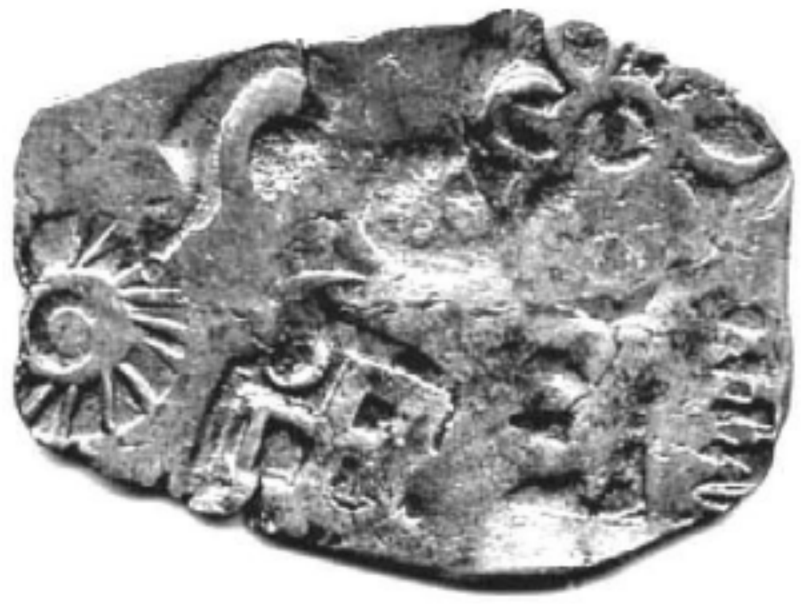
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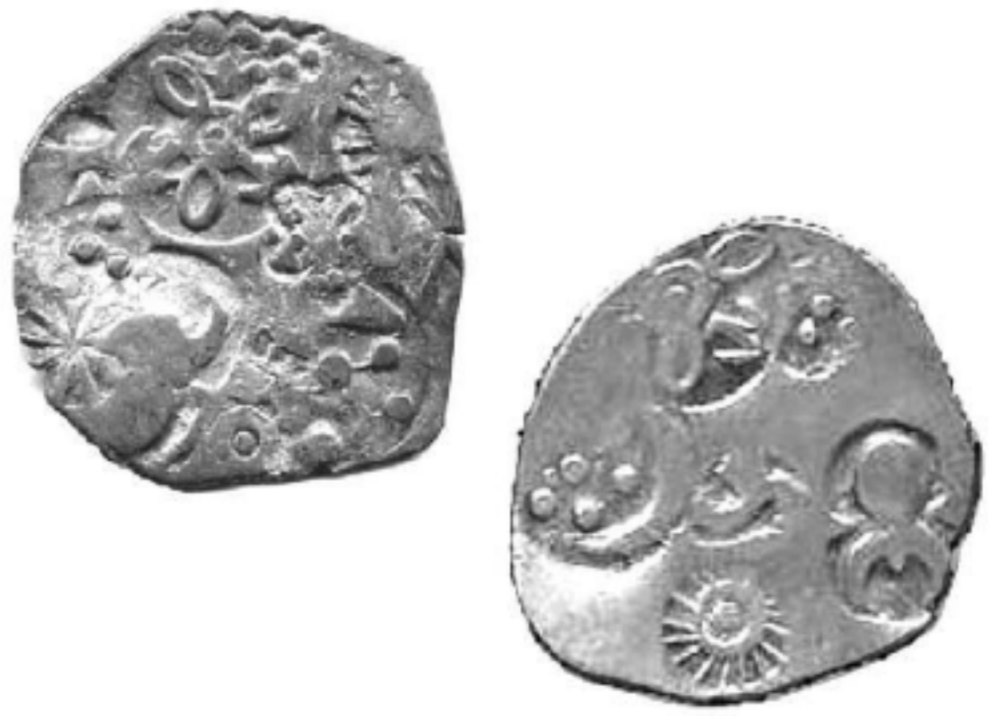
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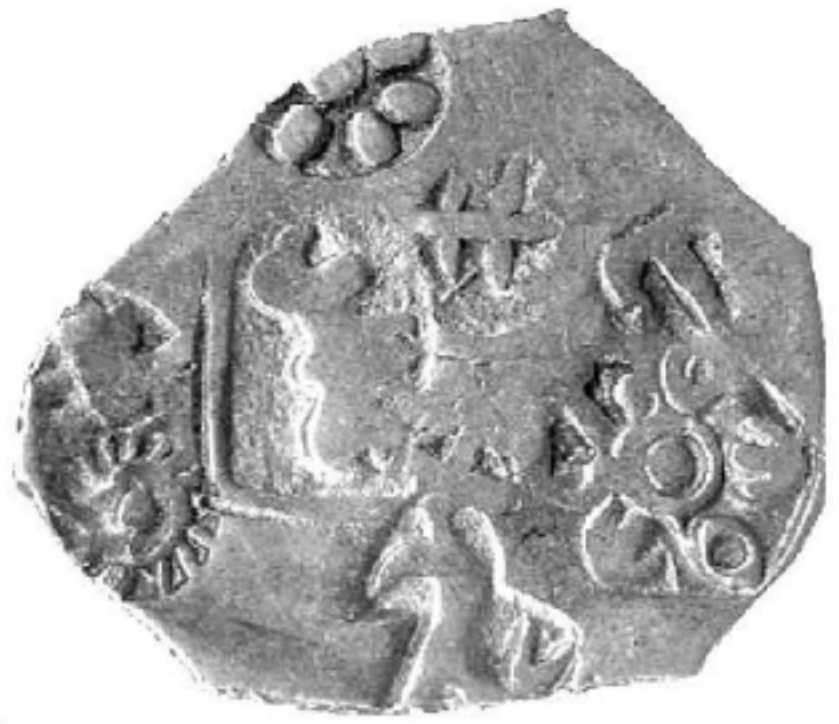
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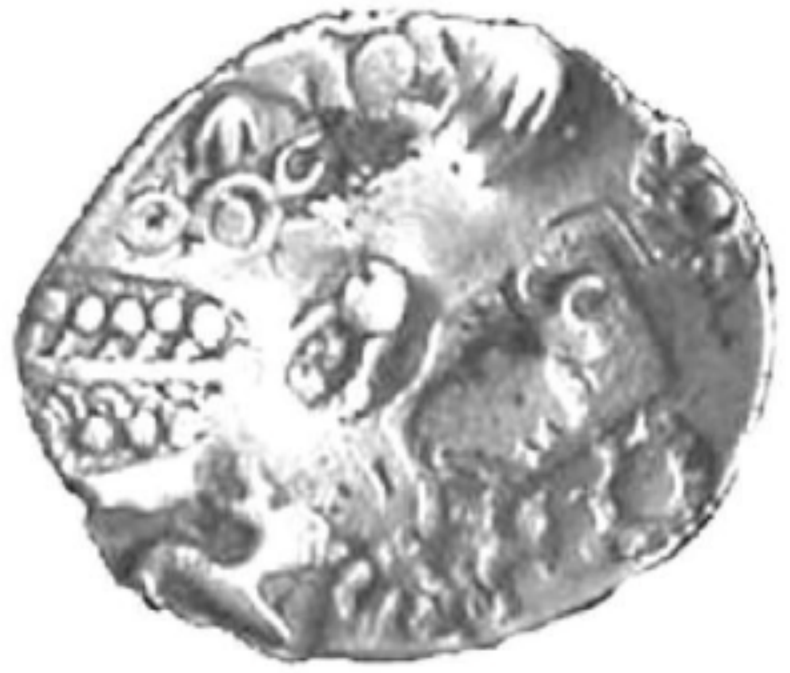
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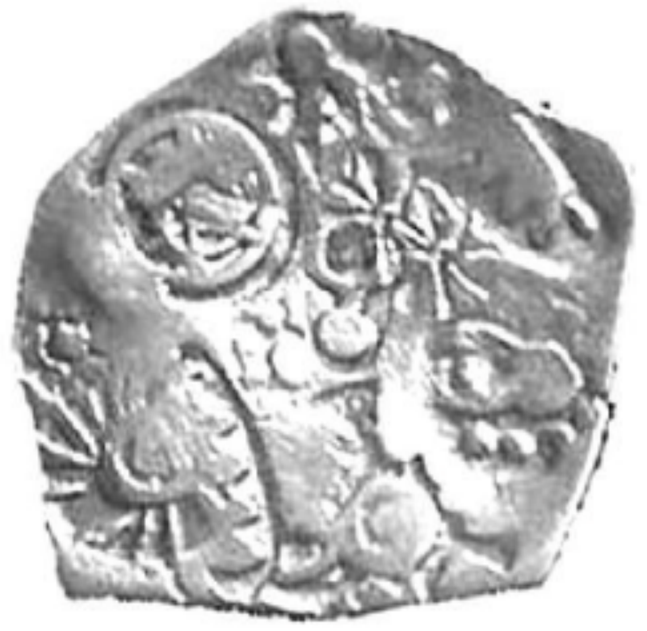
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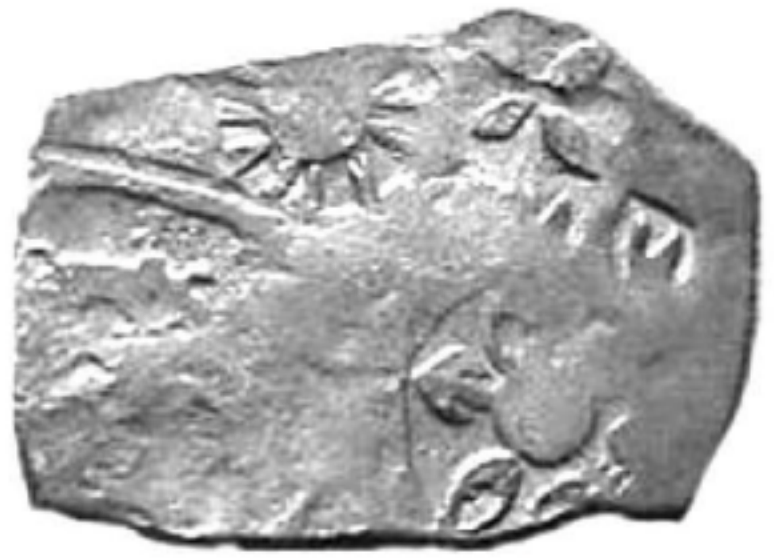
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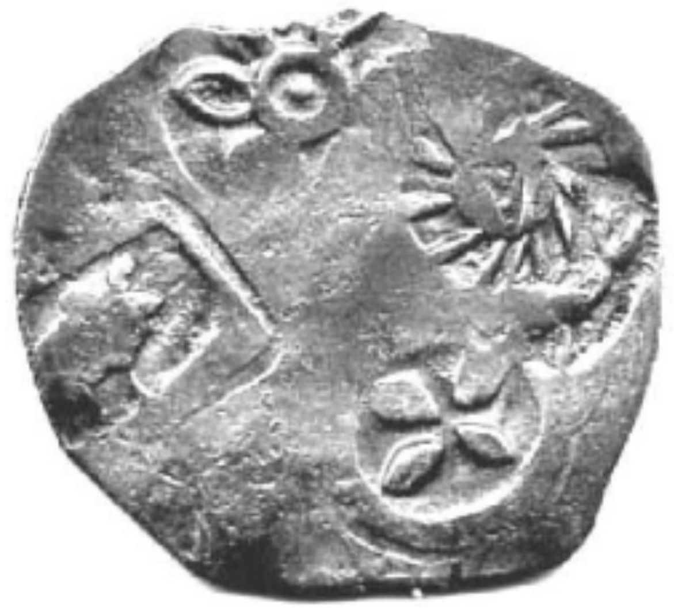
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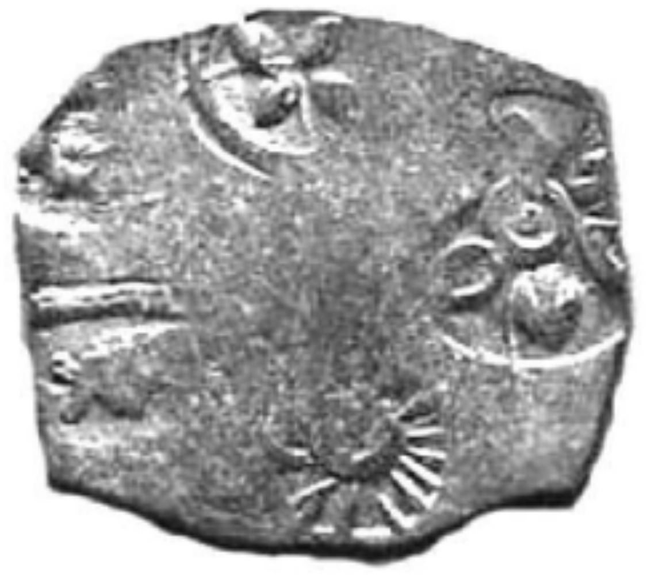
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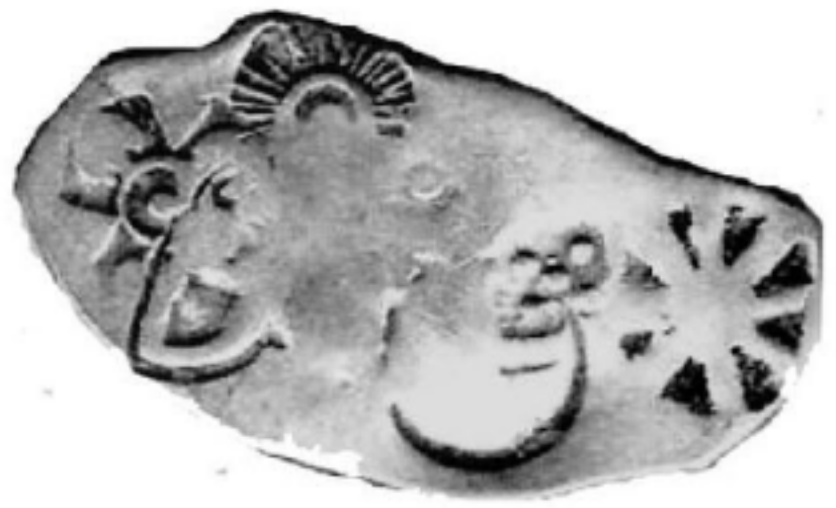
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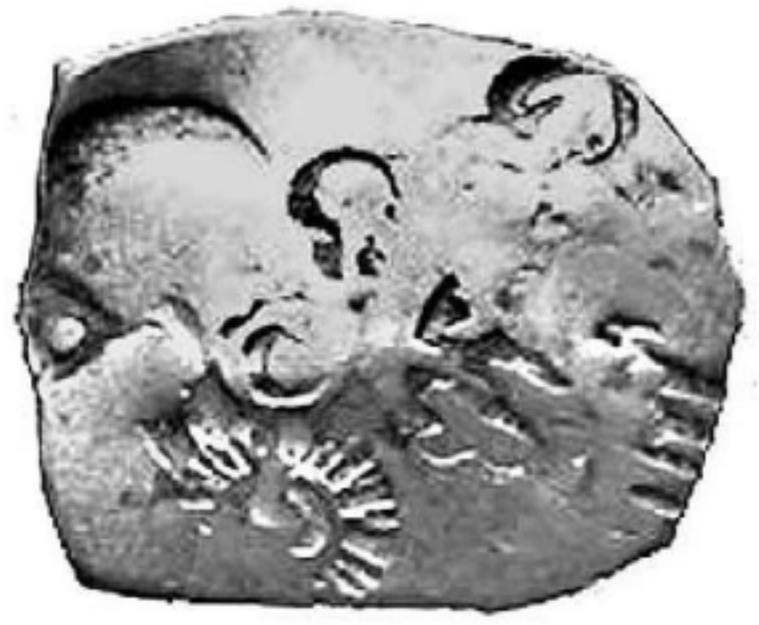
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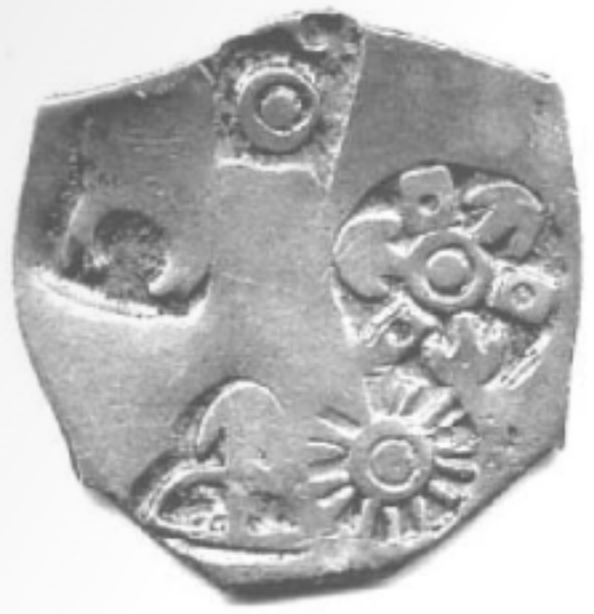
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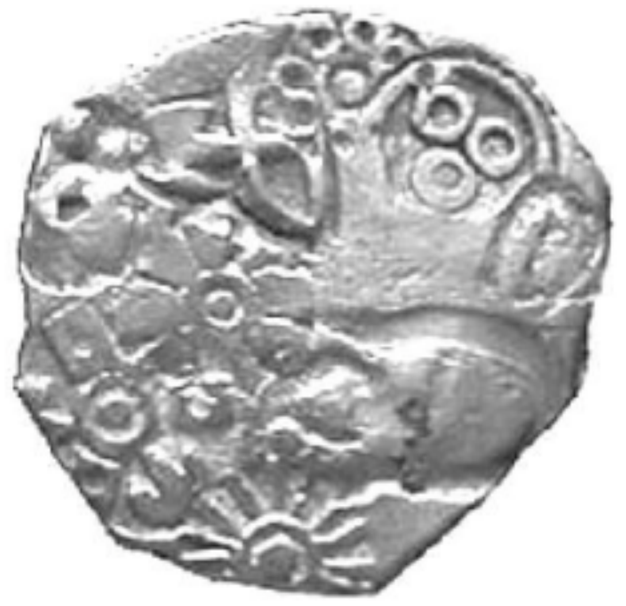
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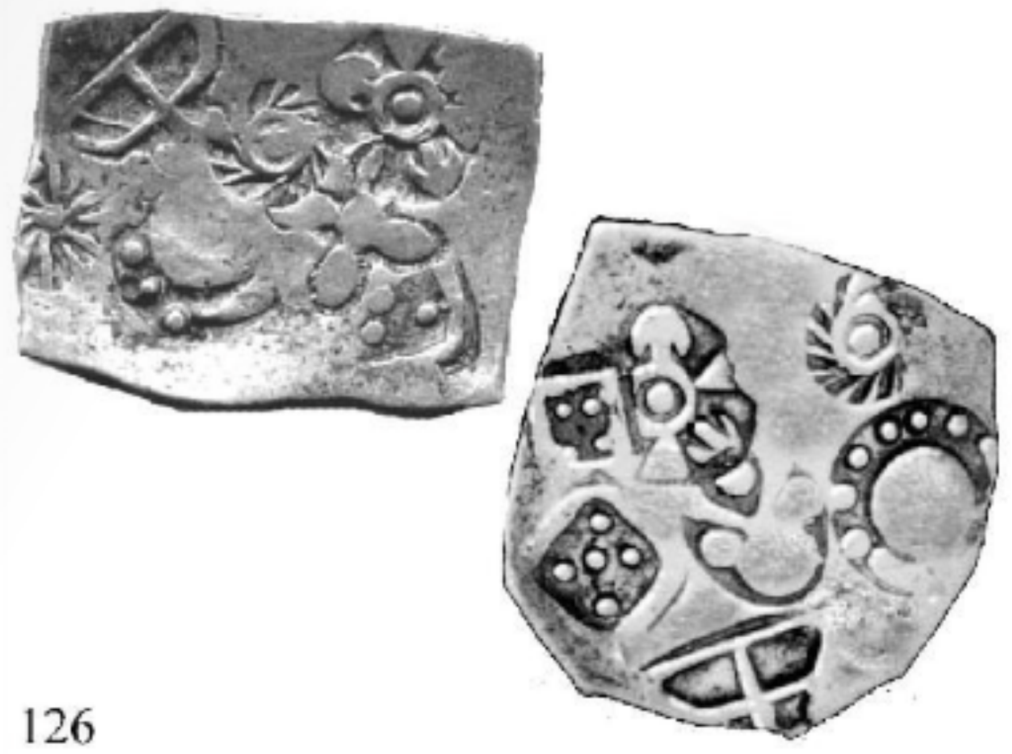
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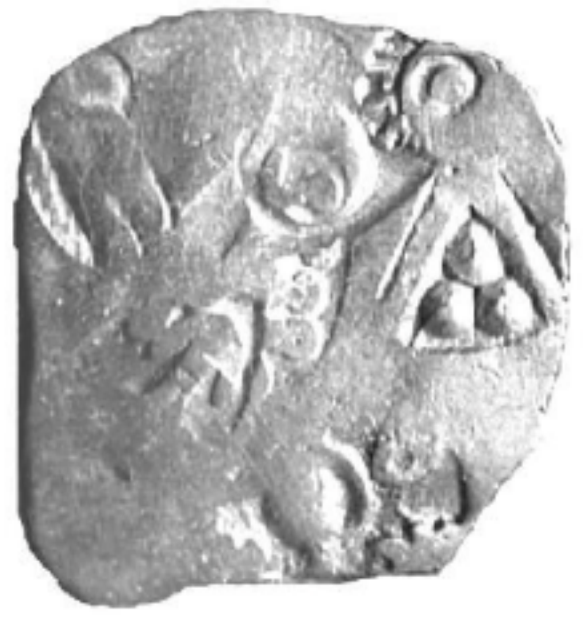
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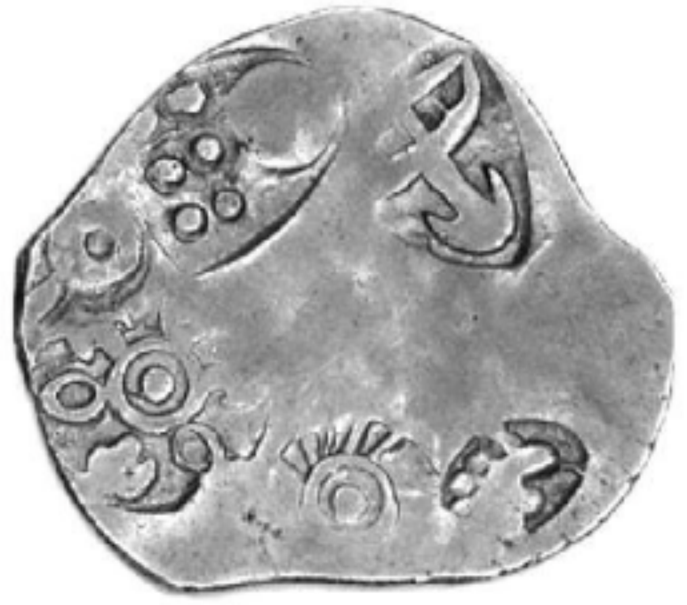
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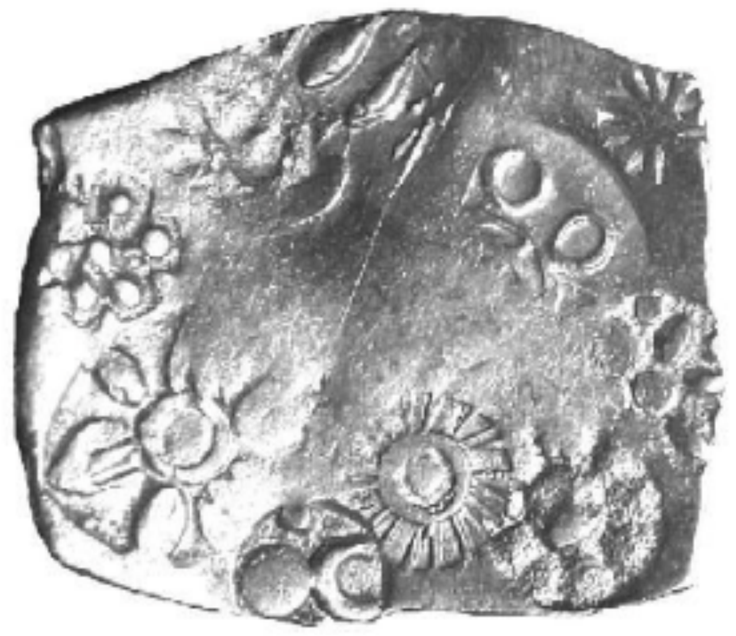
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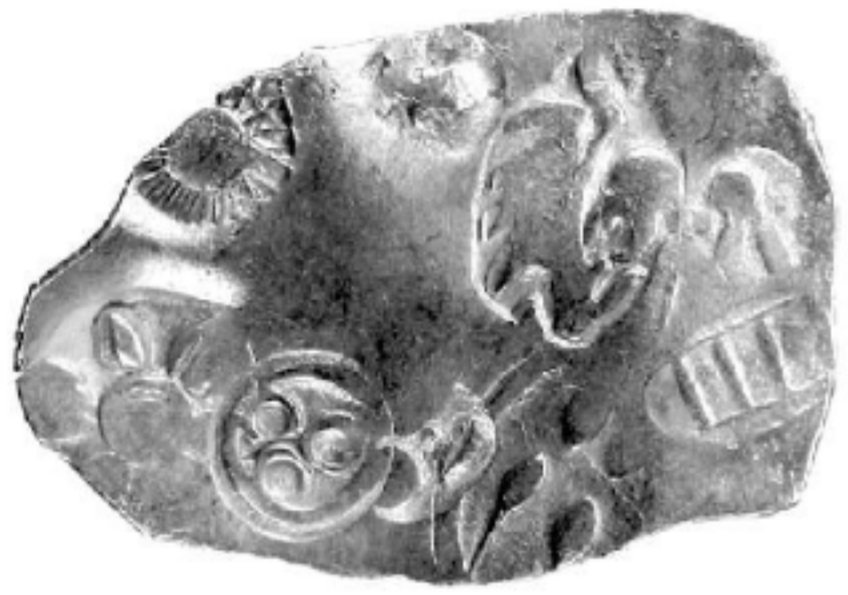
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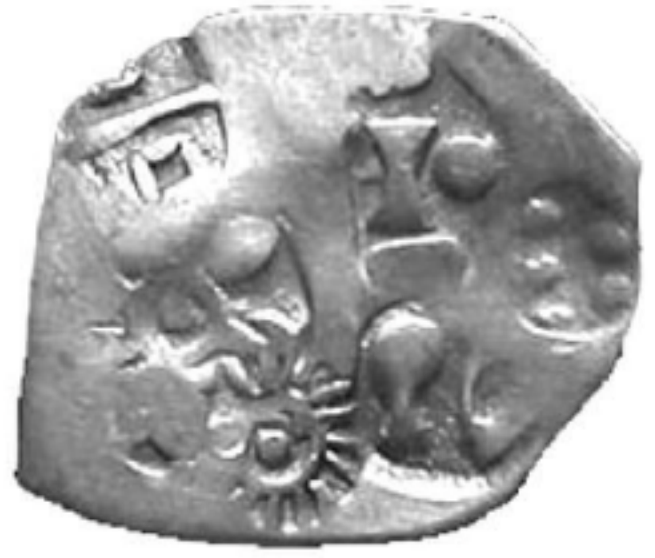
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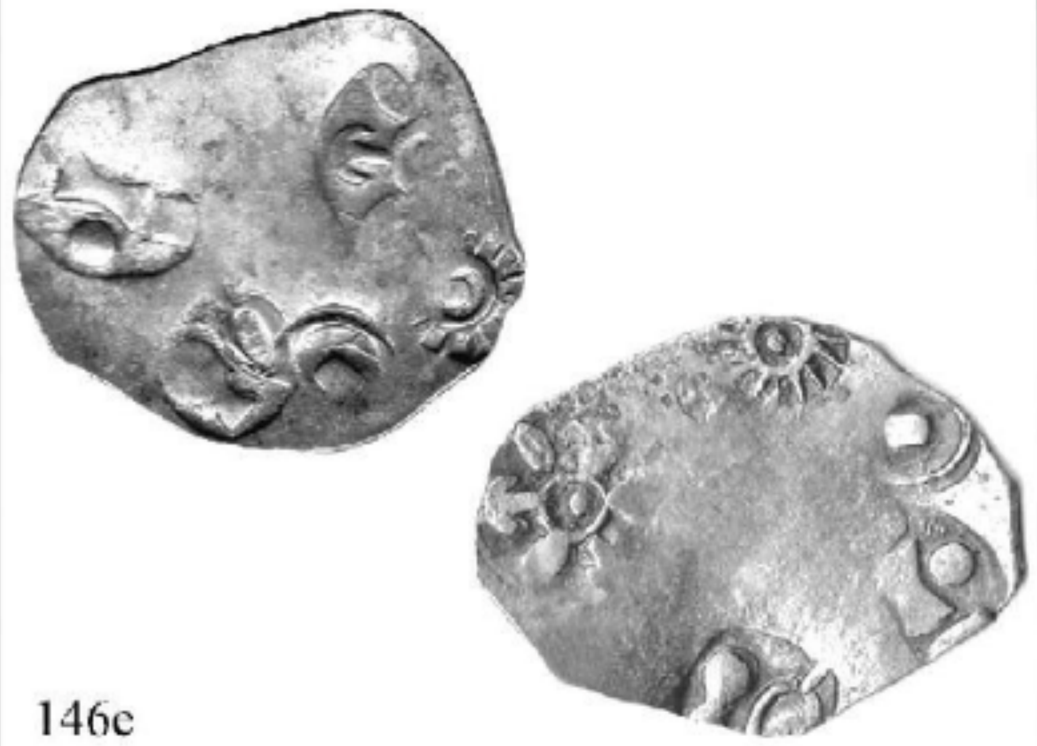
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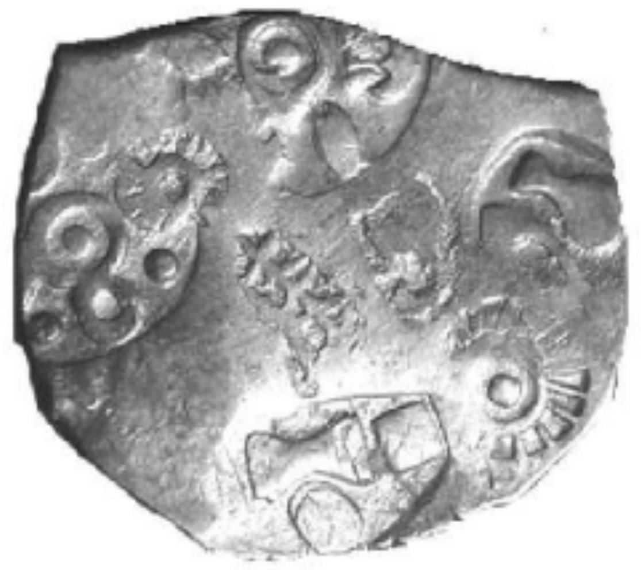
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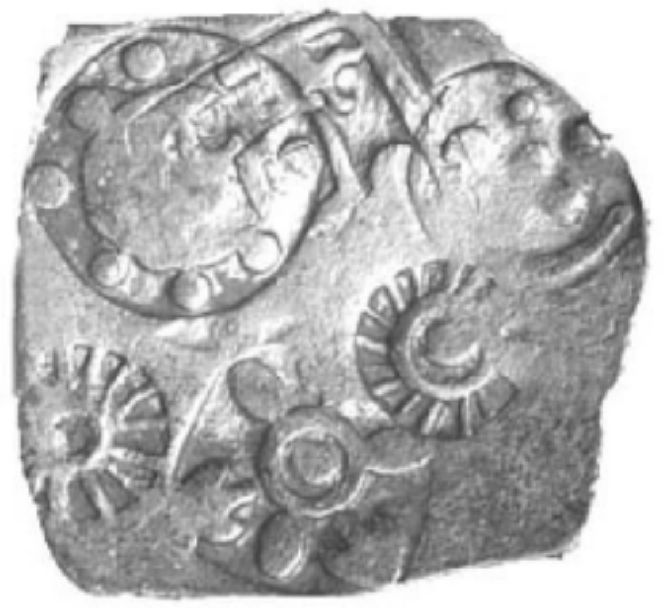
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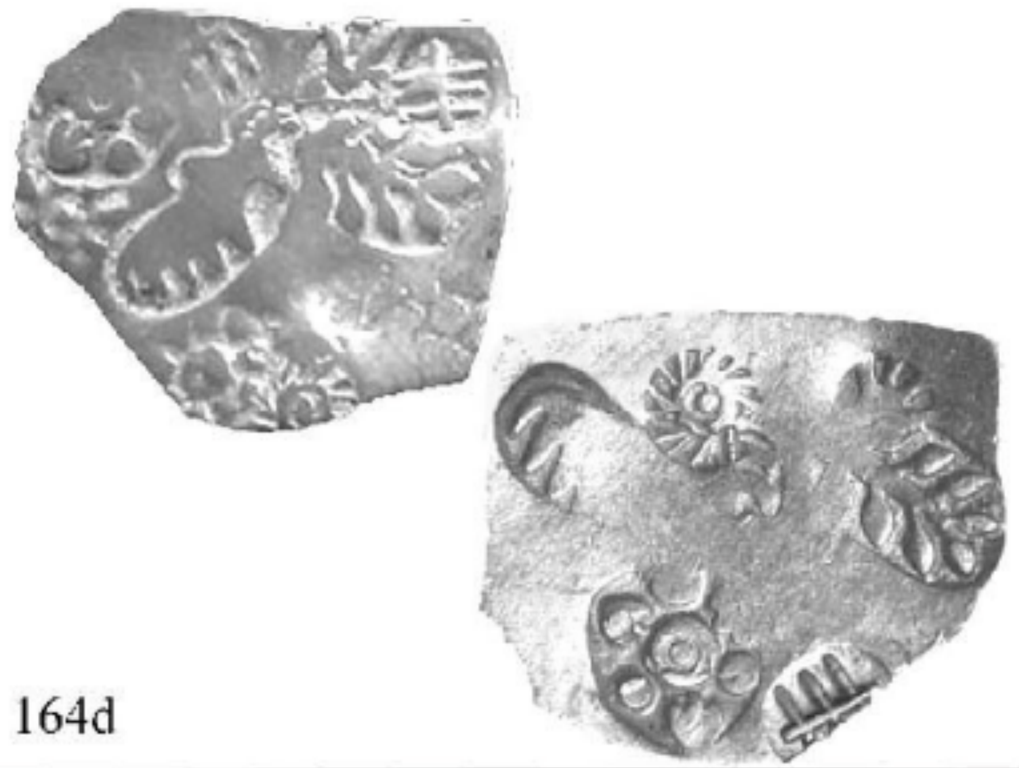
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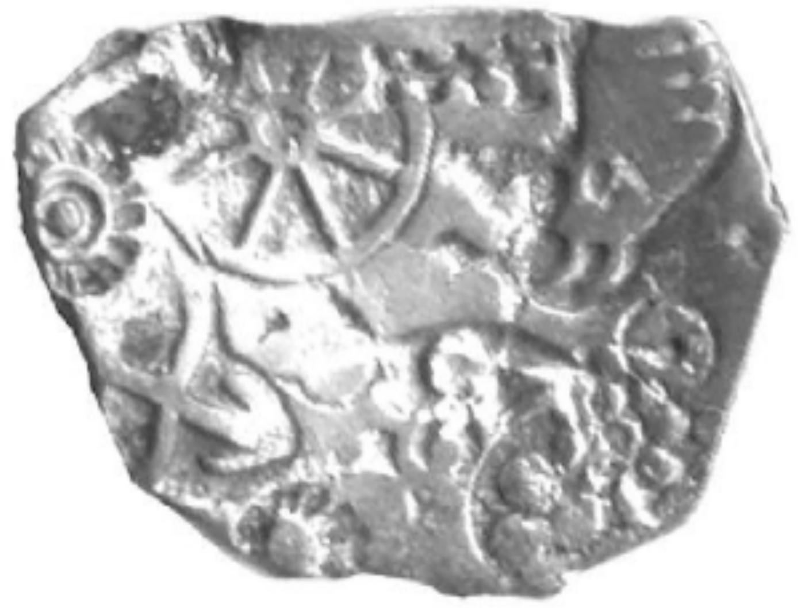
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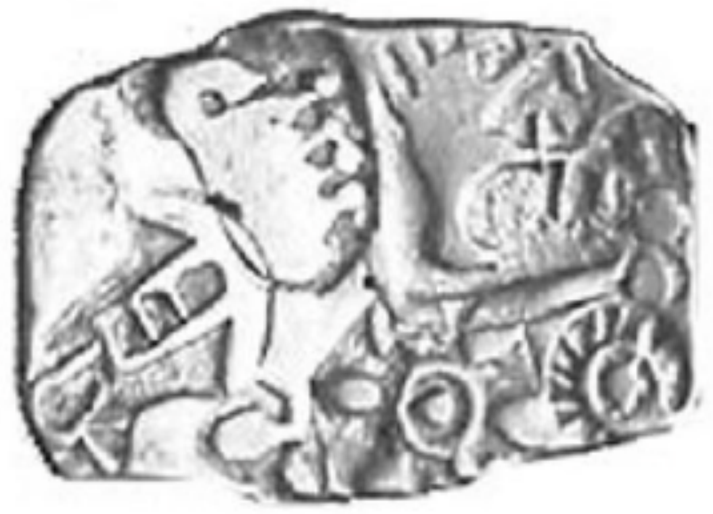
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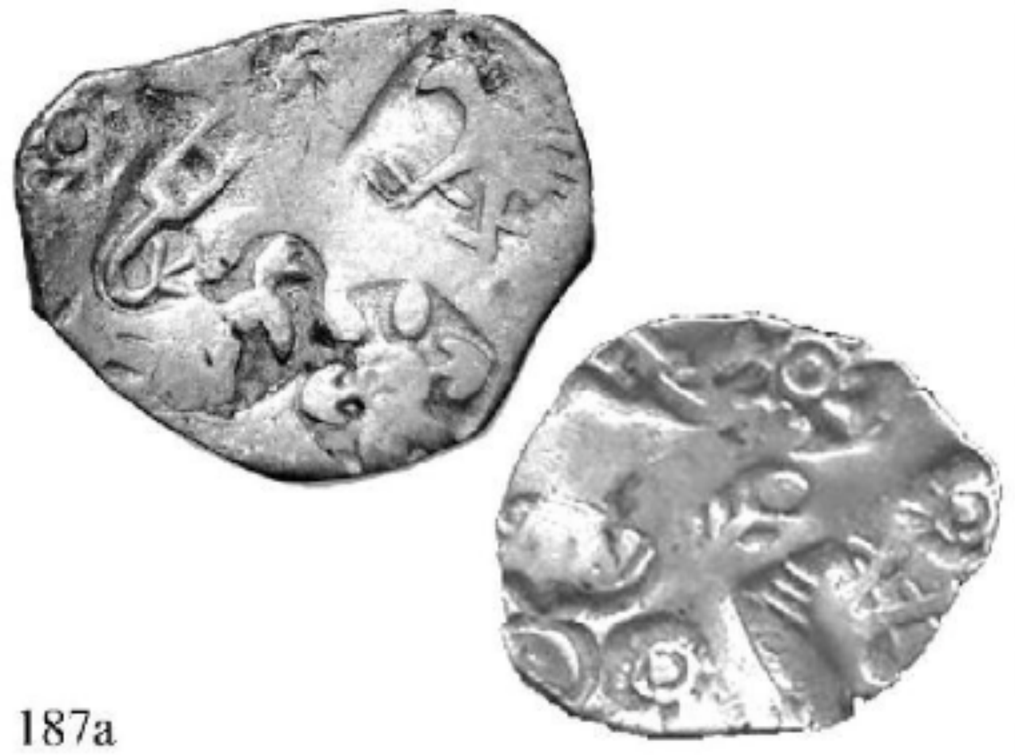
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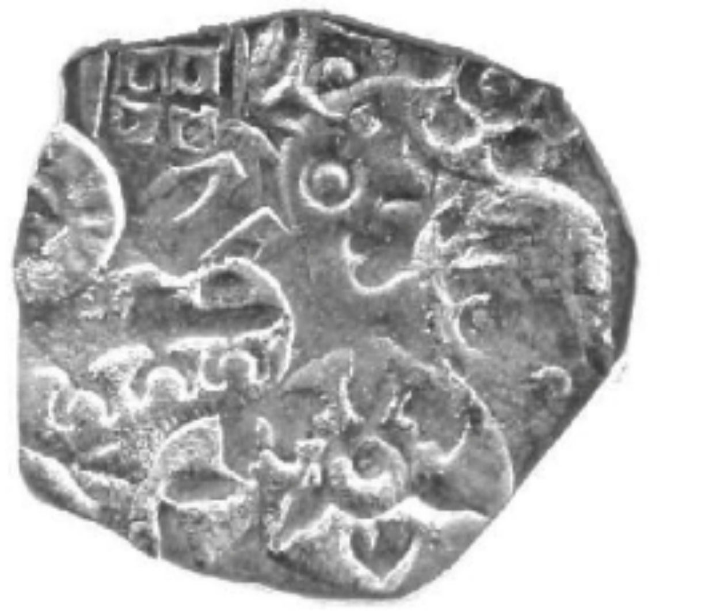
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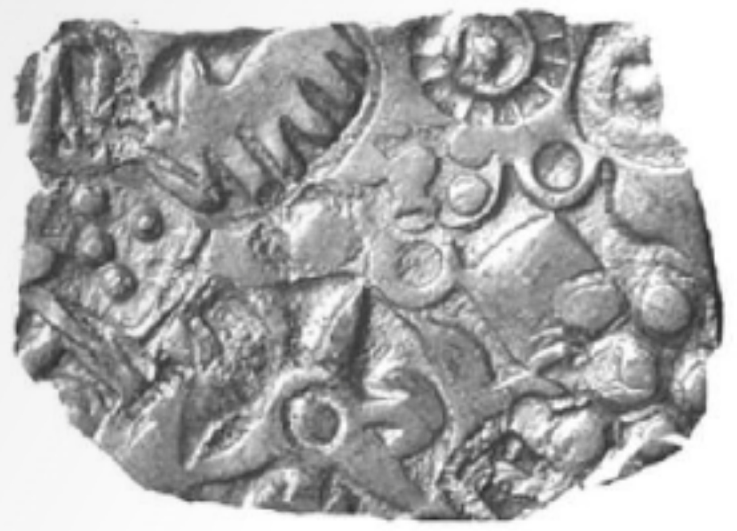
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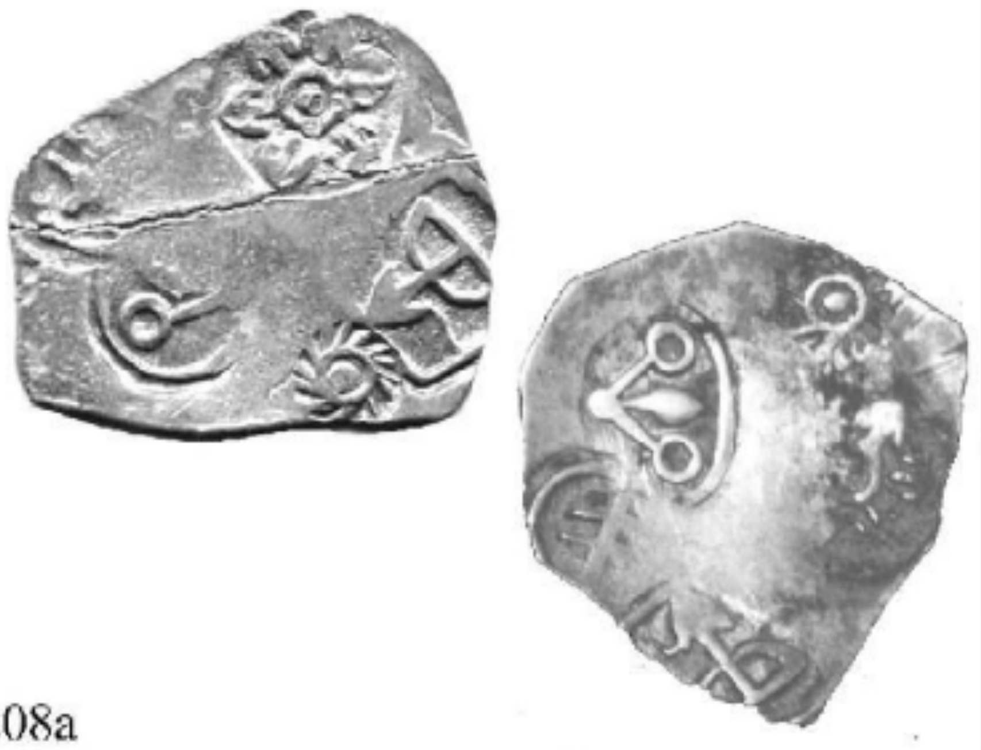
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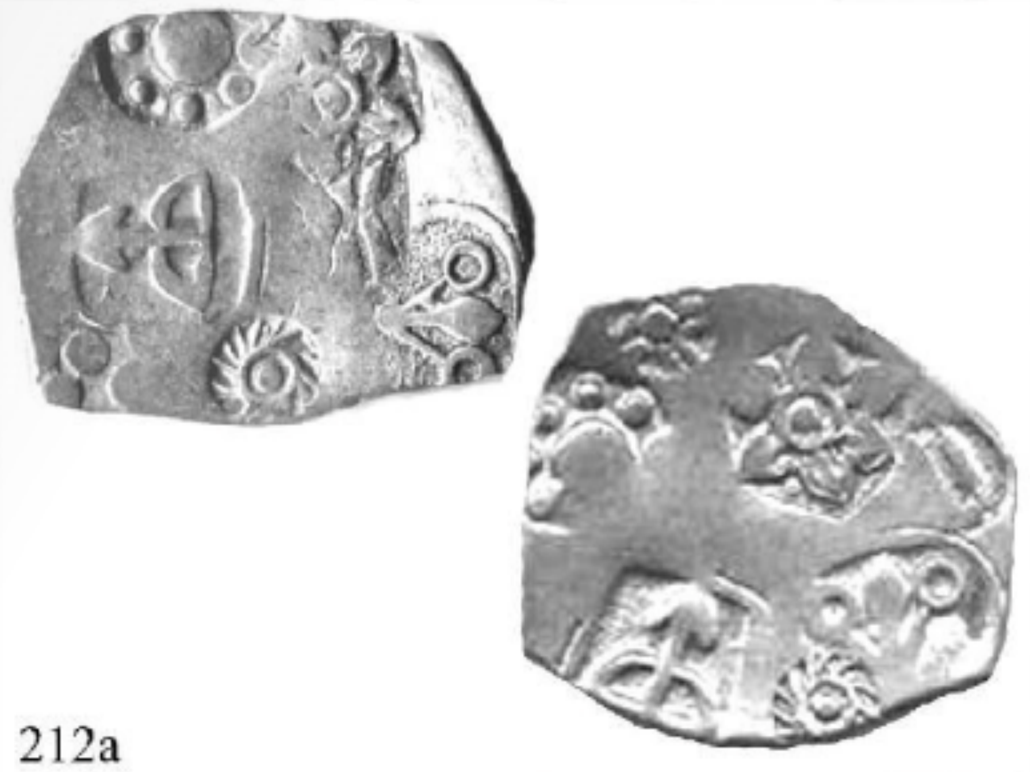
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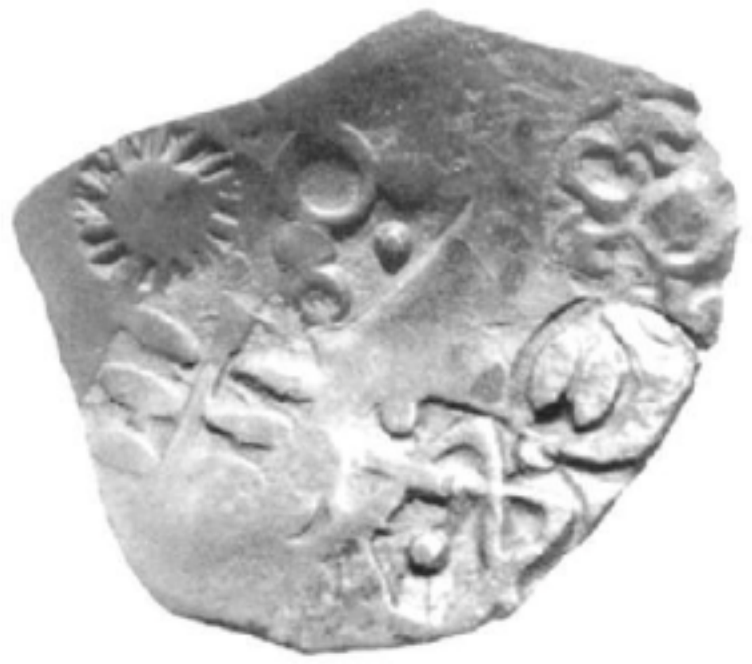
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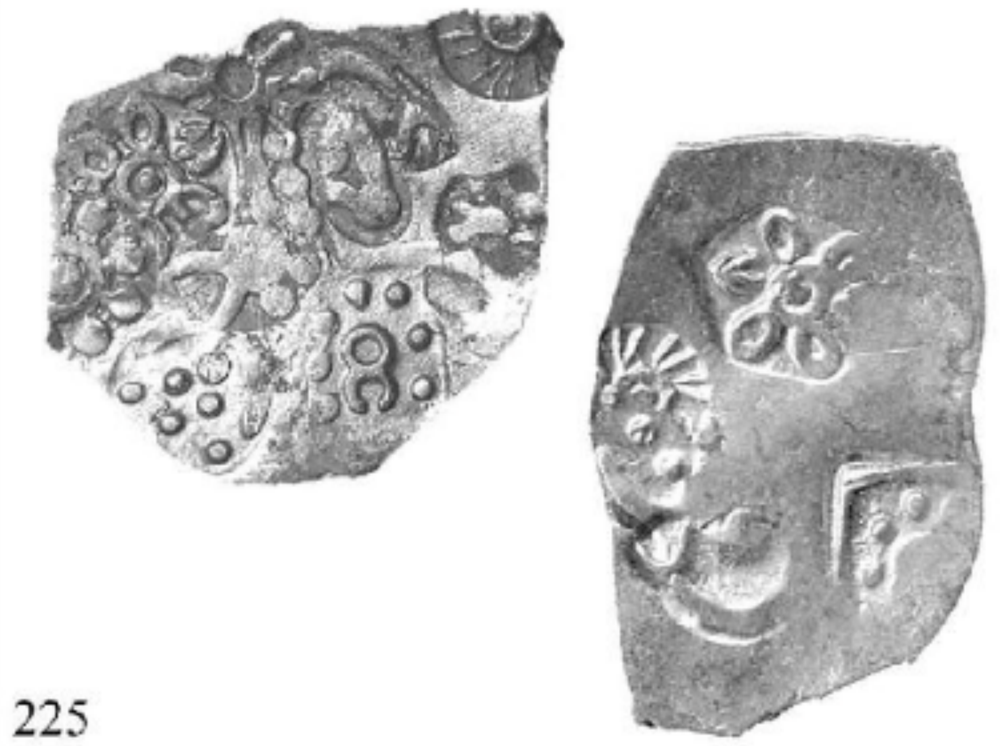
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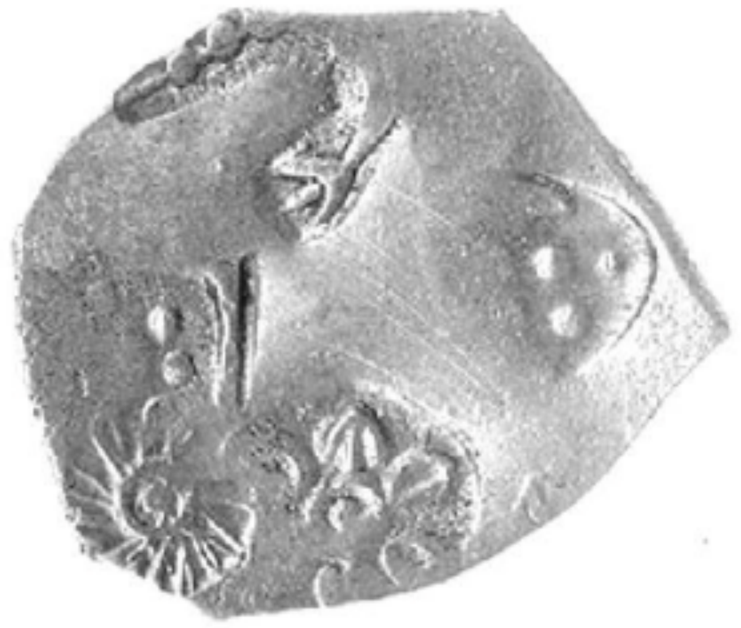
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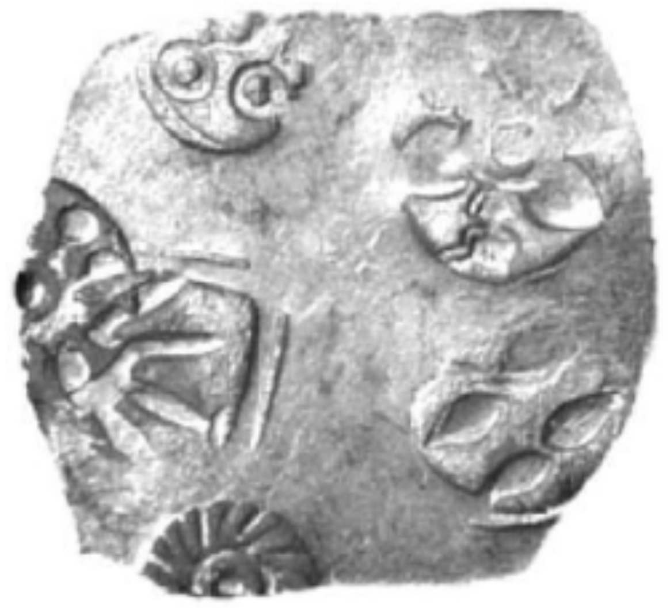
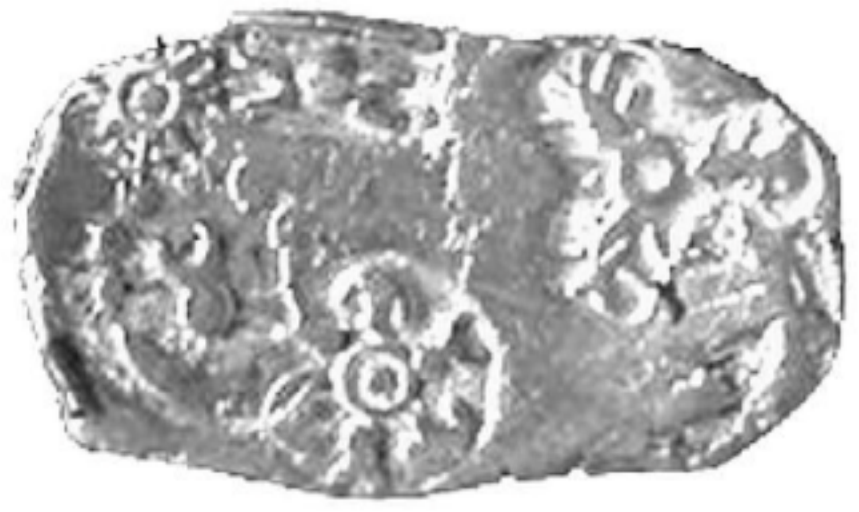
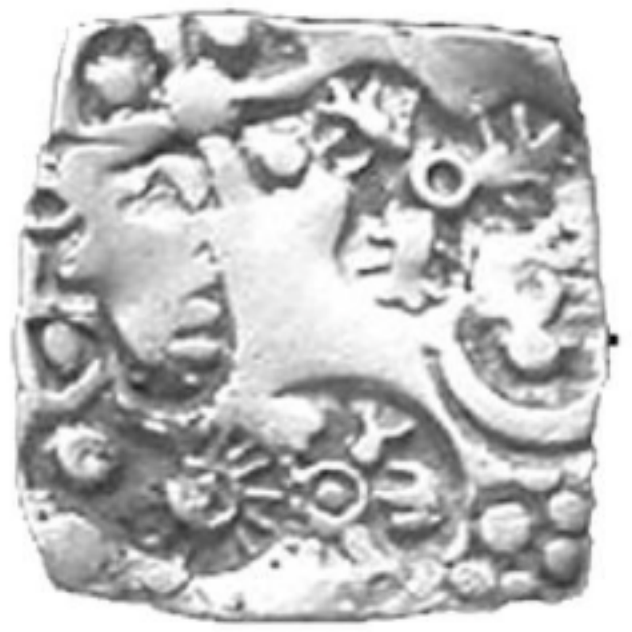

231a


236

## ENLARGEMENTS SERIES I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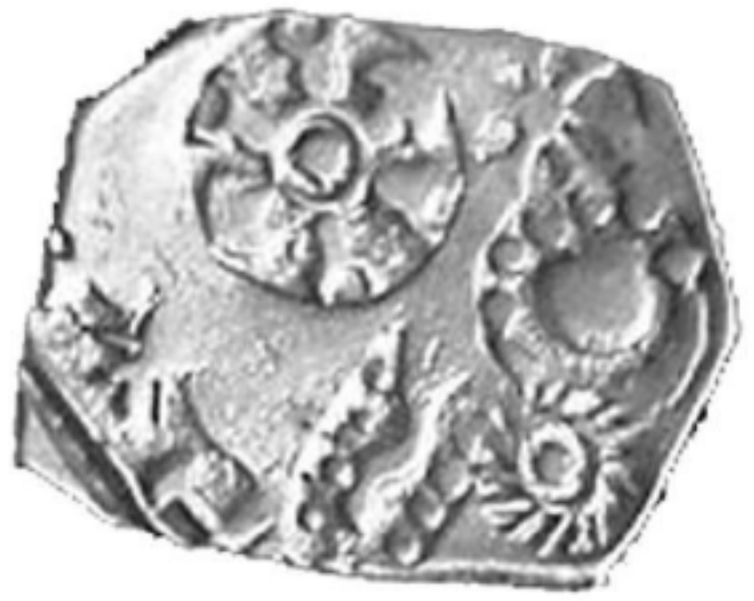
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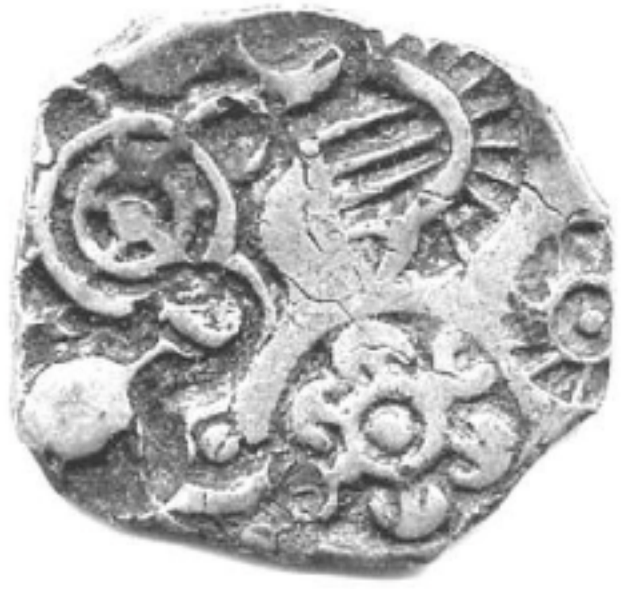
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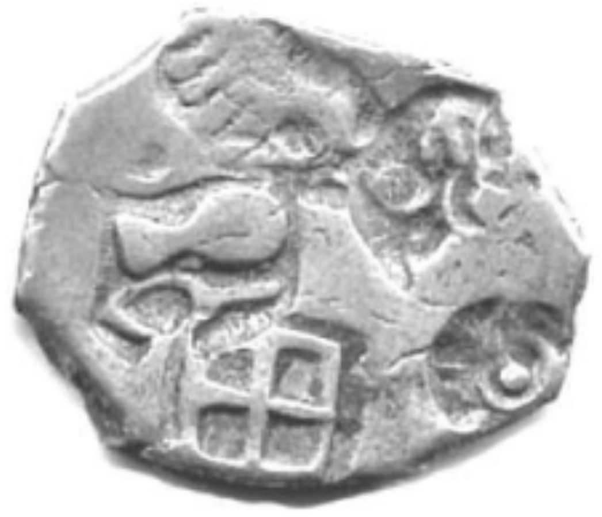
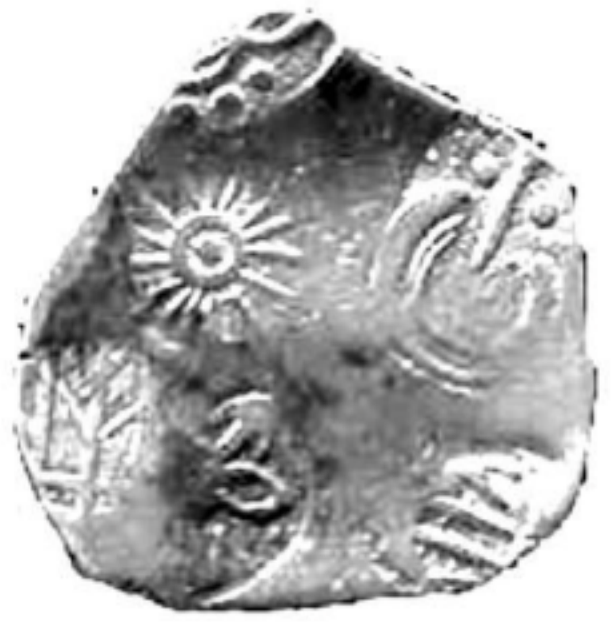
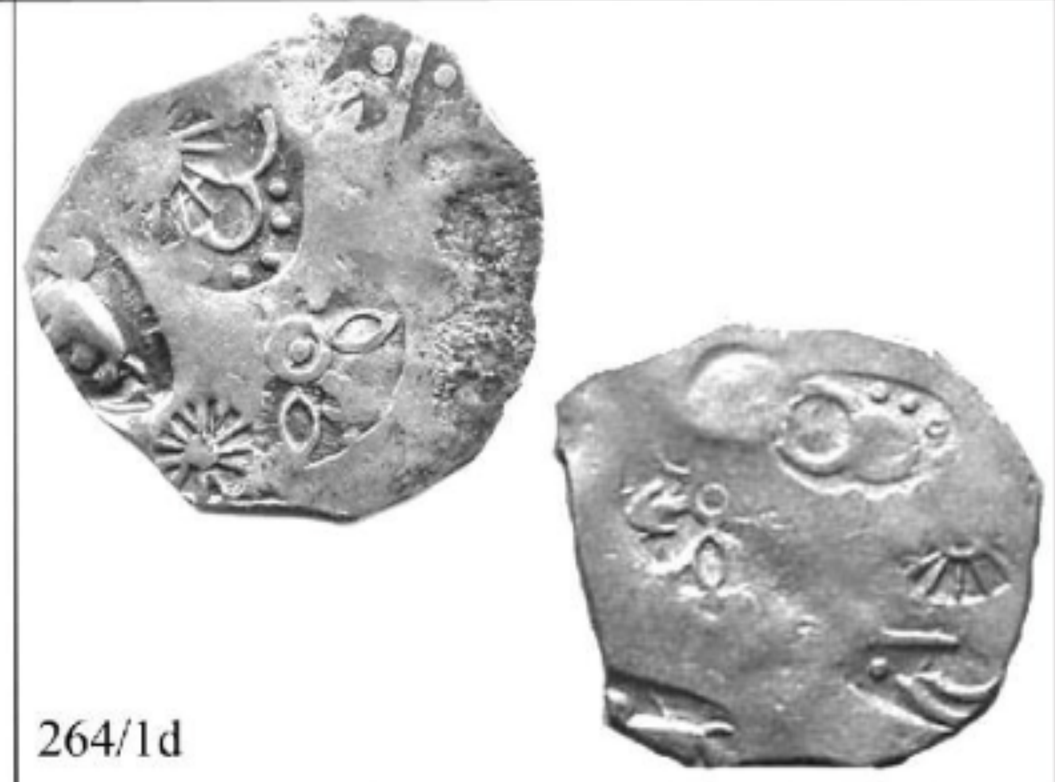

258


264/1c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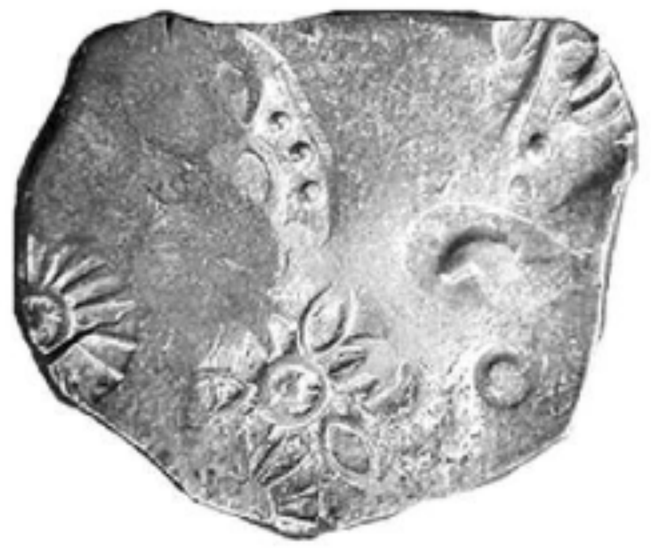
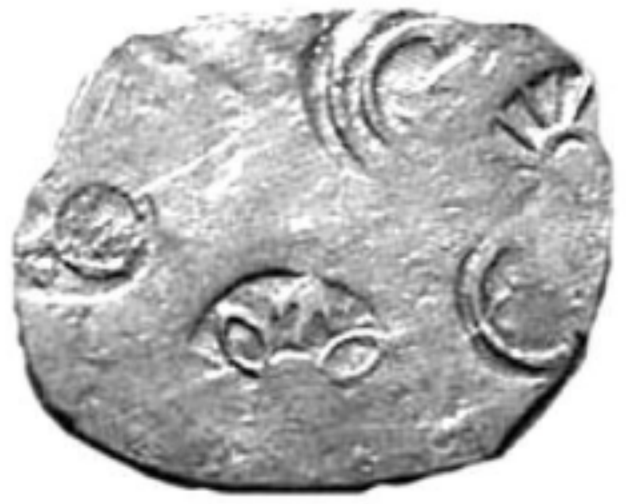
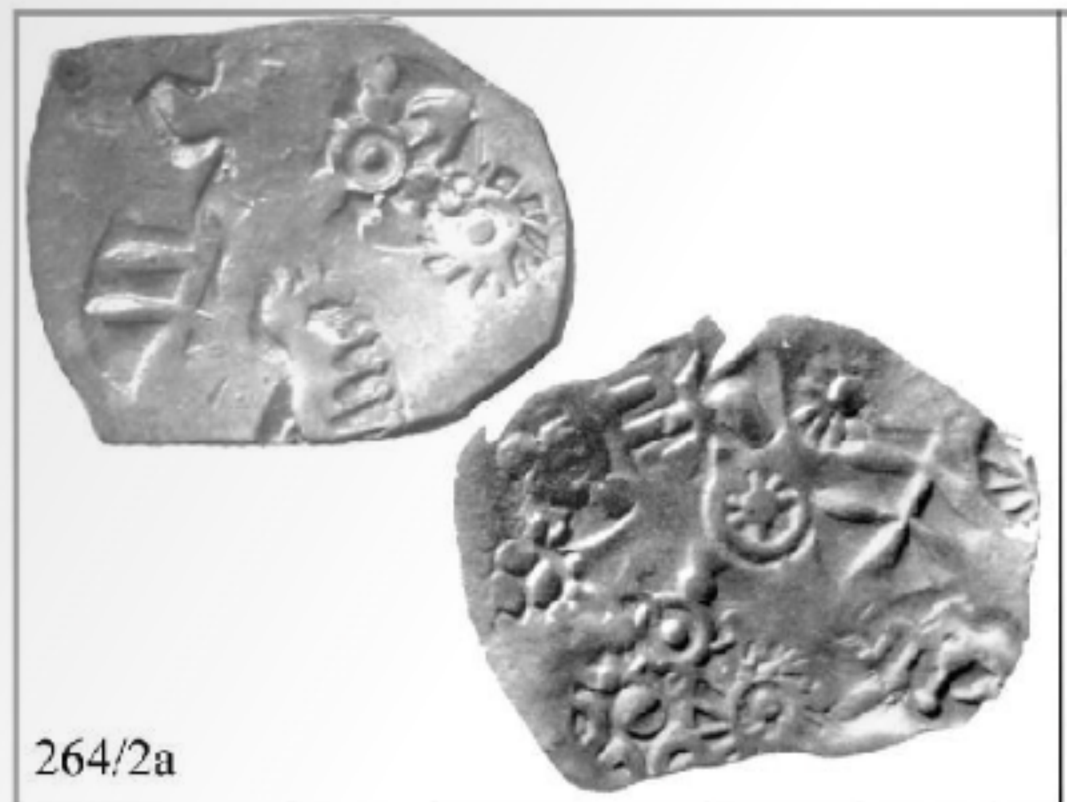

264/1f


264/1g

## ENLARGEMENTS SERIES I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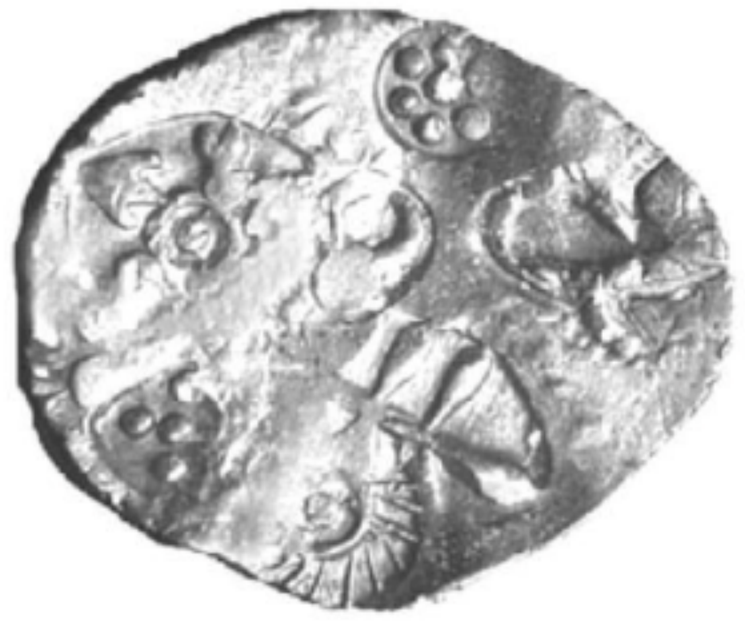
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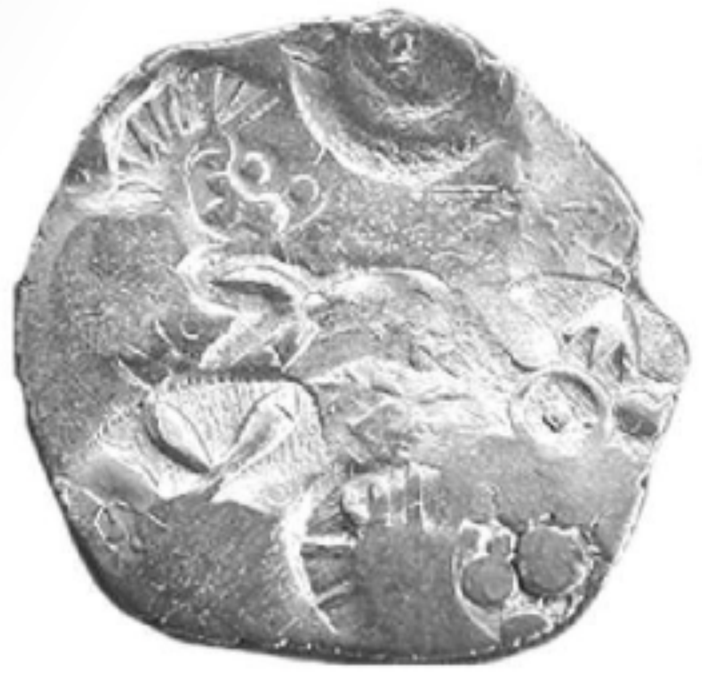
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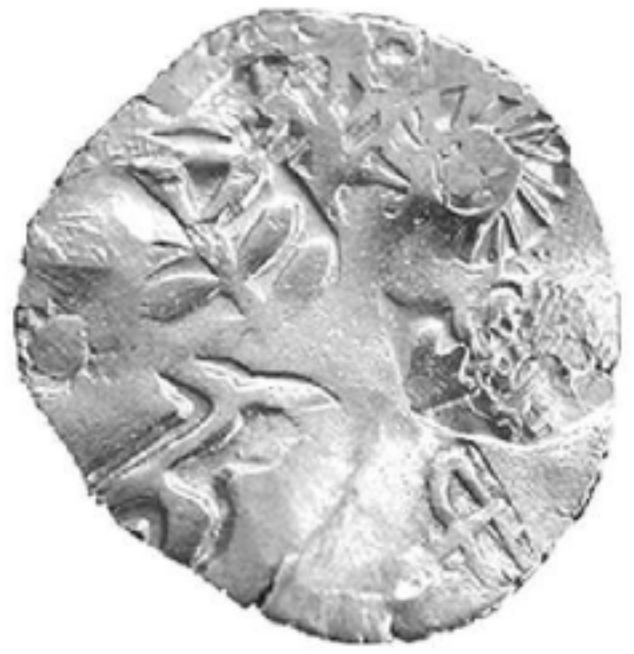
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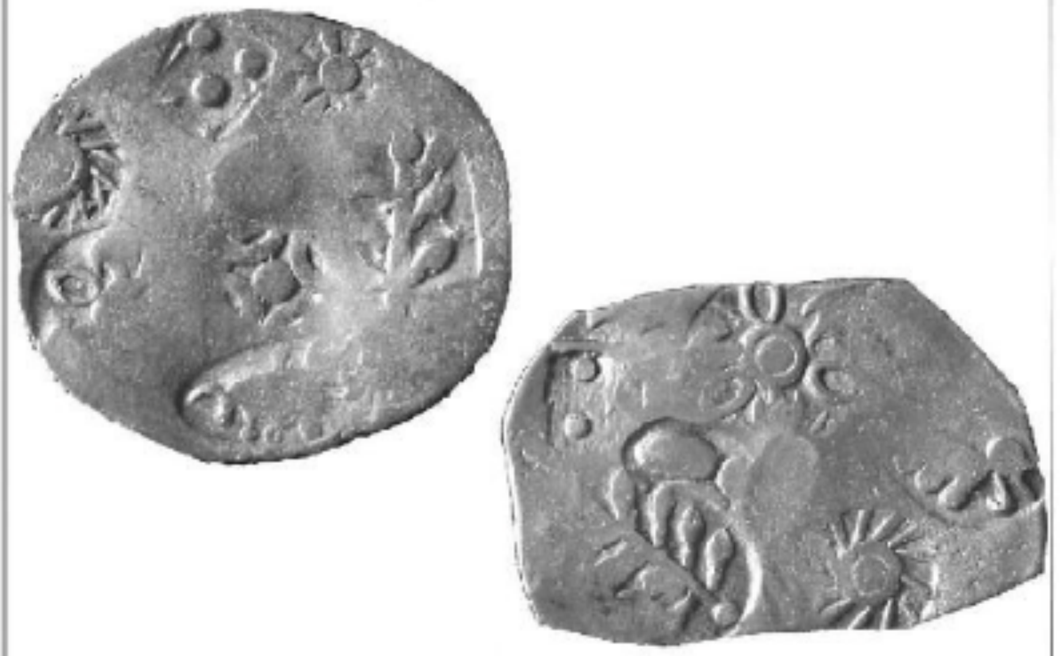
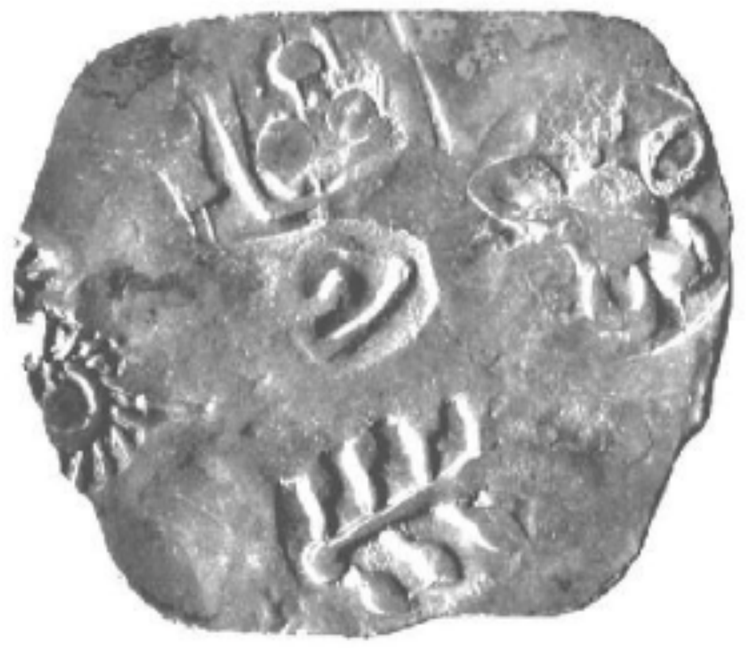

264/3a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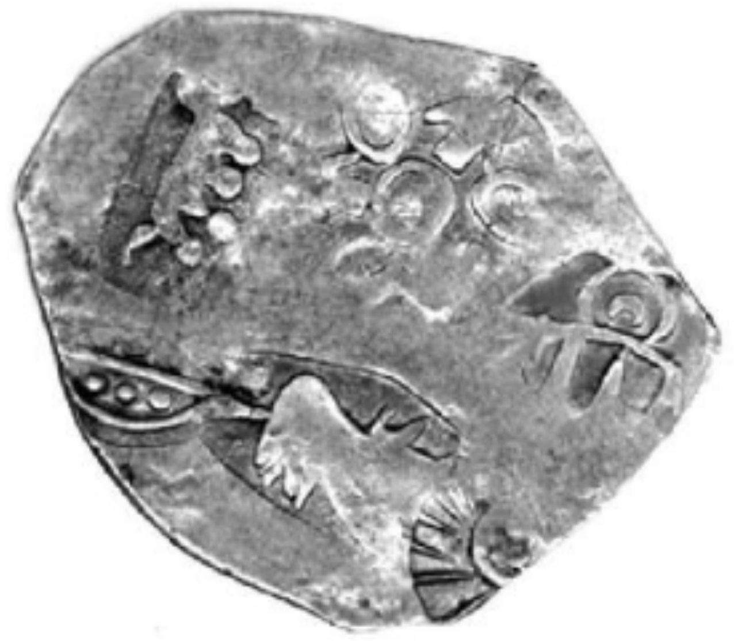
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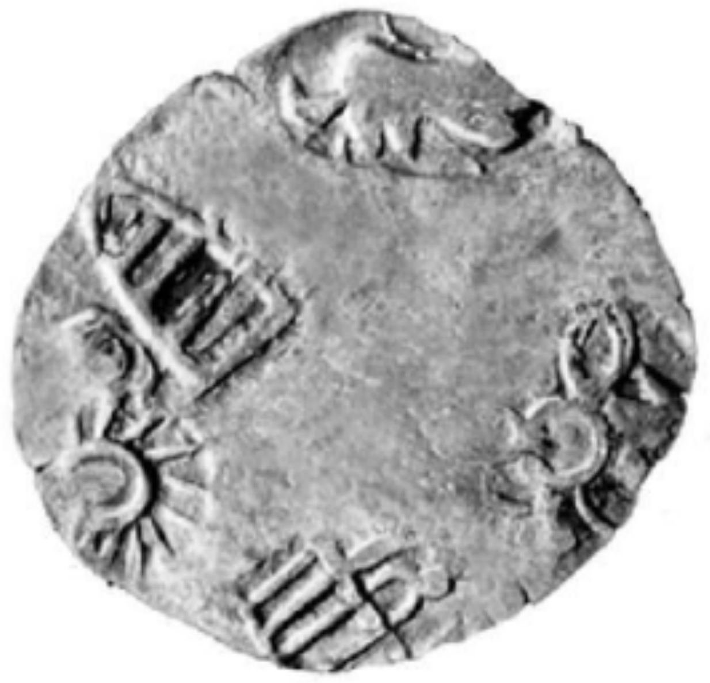
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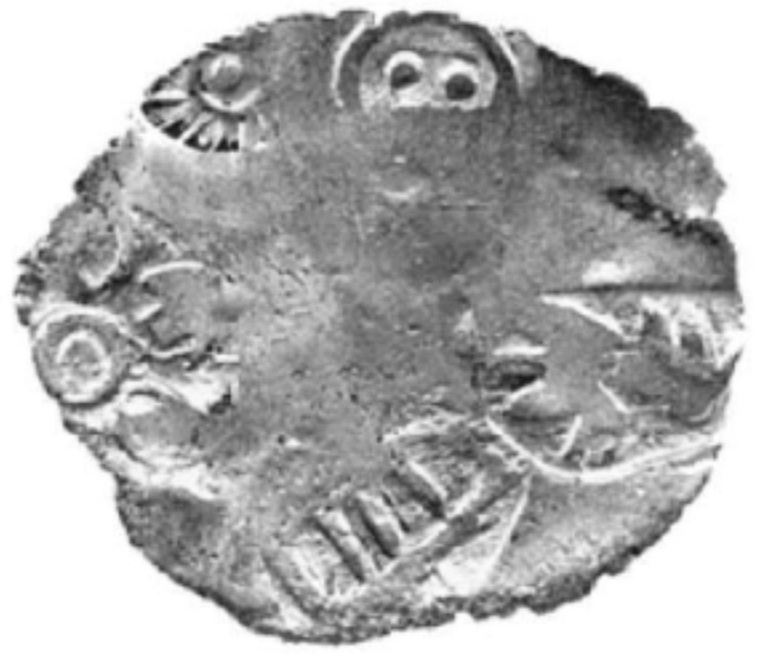
## ENLARGEMENTS SERIES I- SERIES I VASSAL STATE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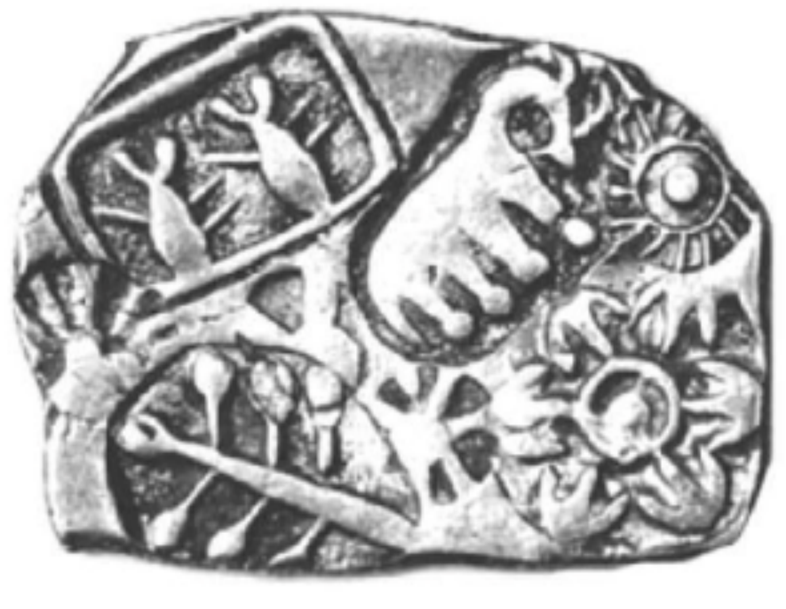
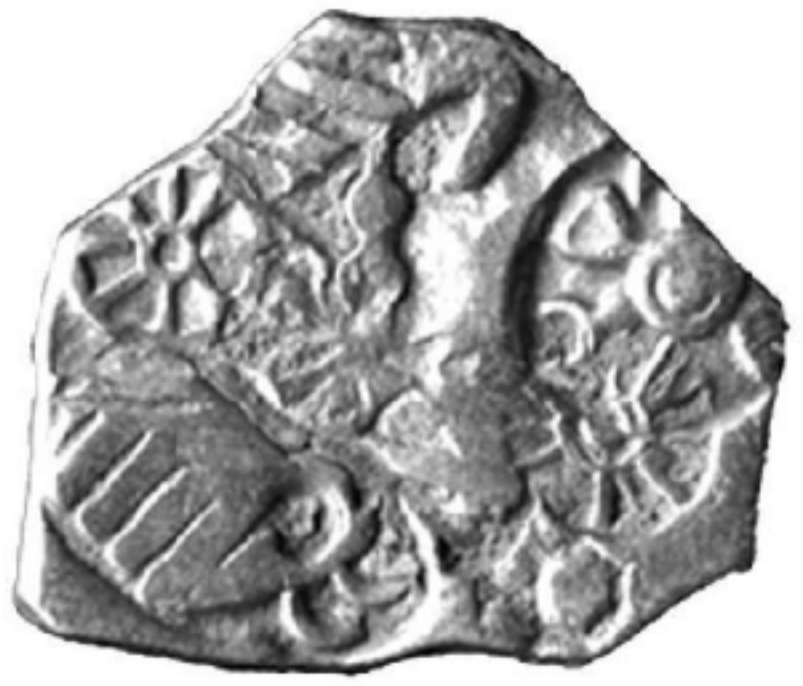
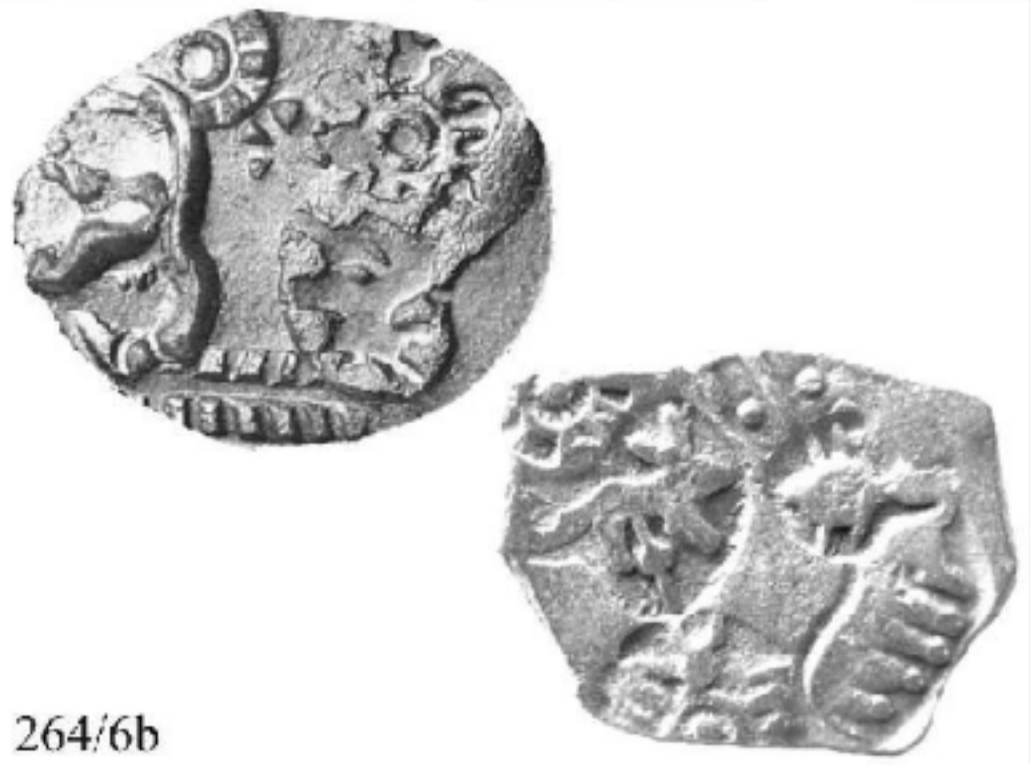
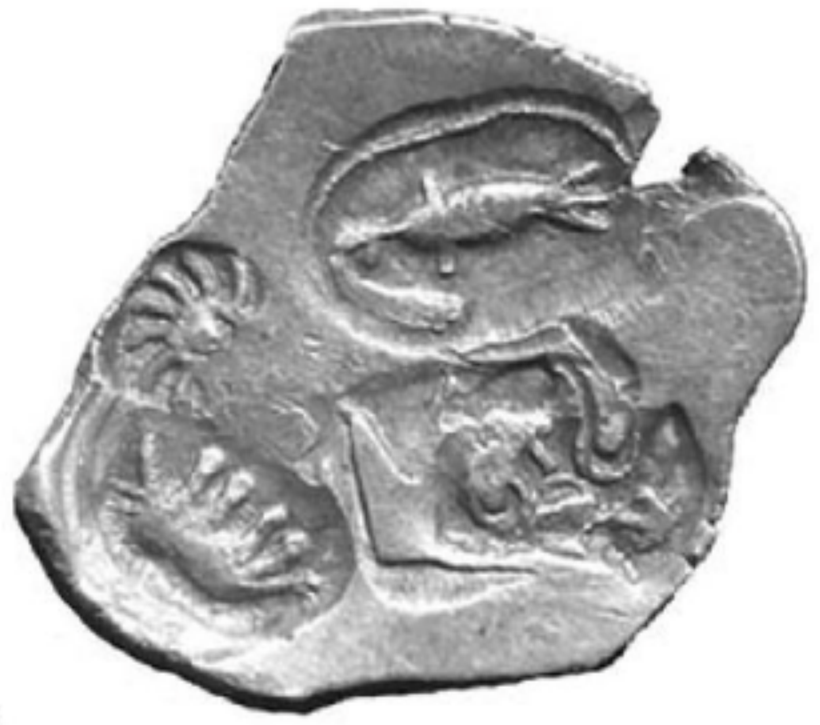

264/5a


264/6a


264/6b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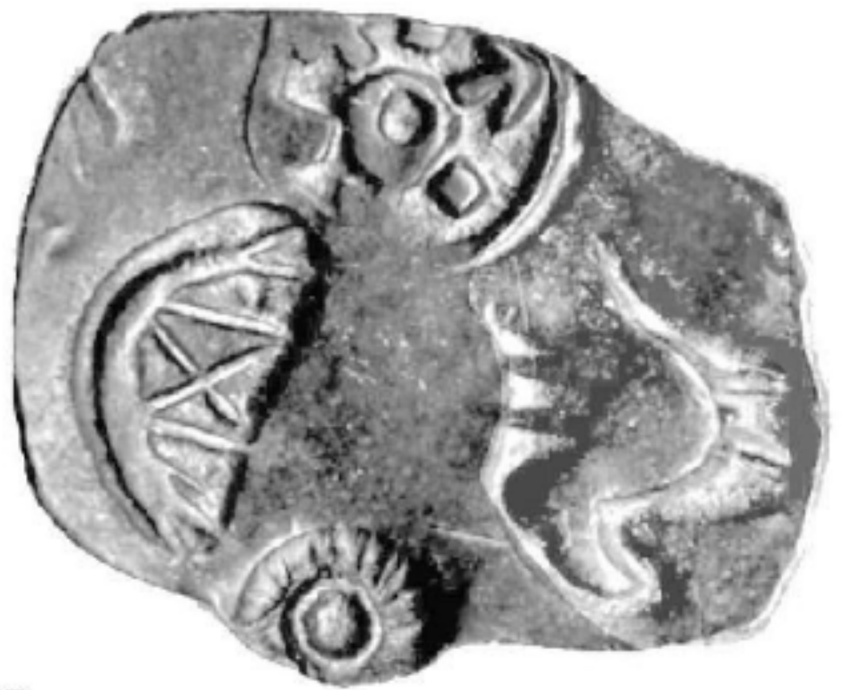
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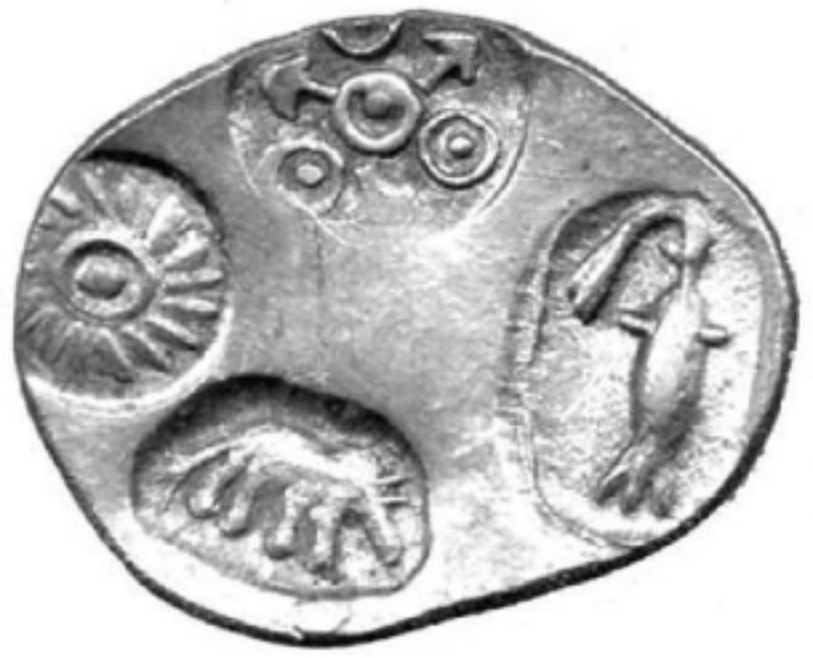
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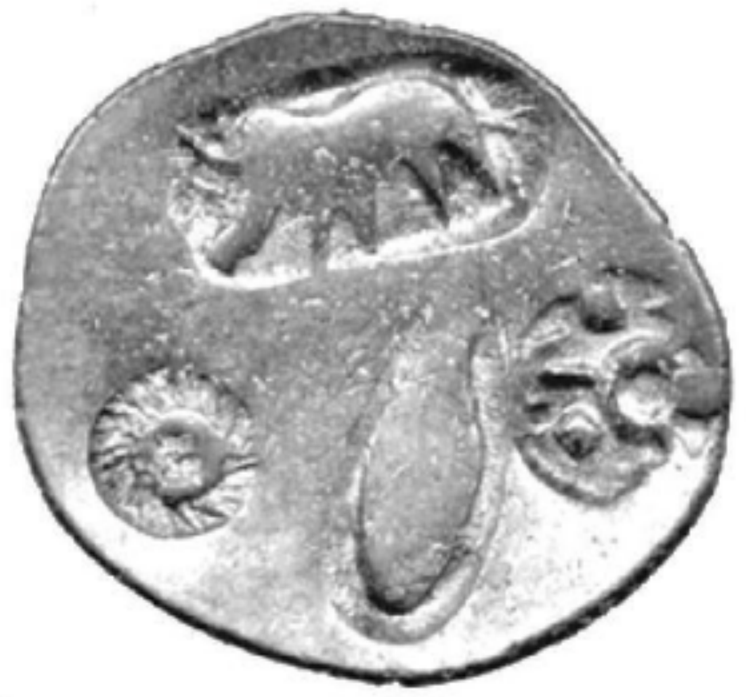
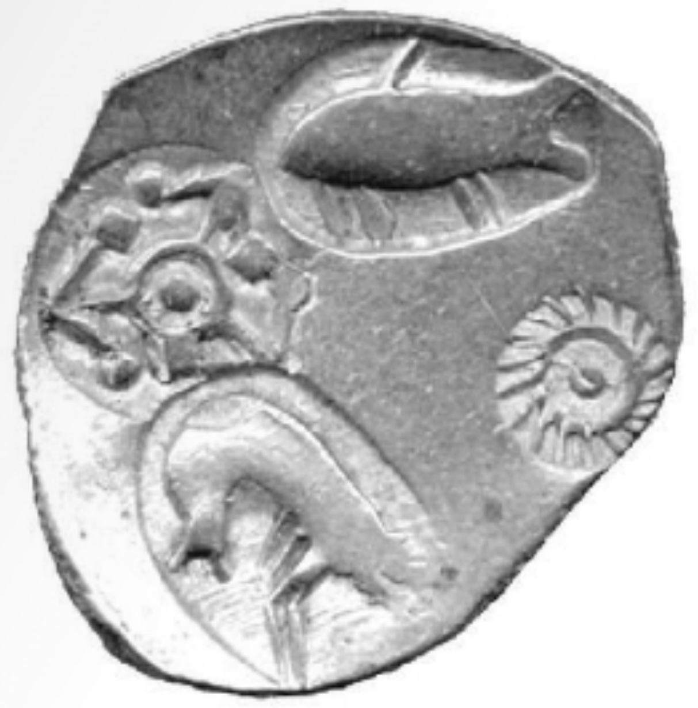

264/10a

## ENLARGEMENTS SERIES I VASSAL STATE - SERIES I/II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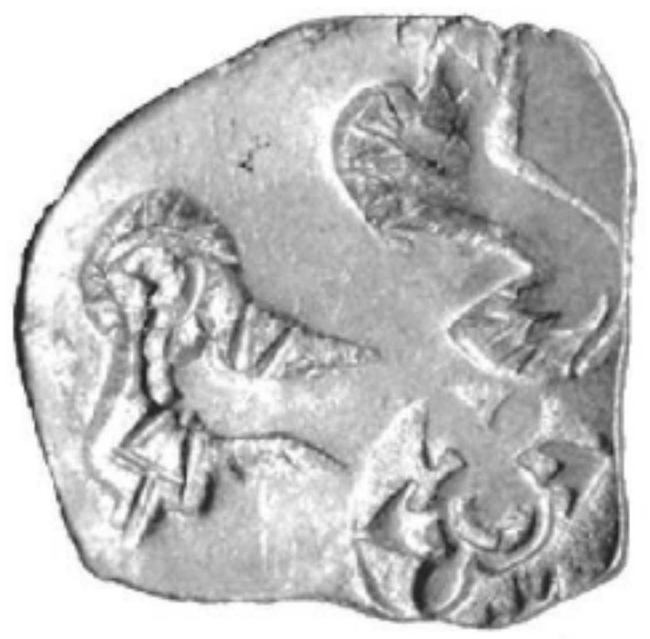
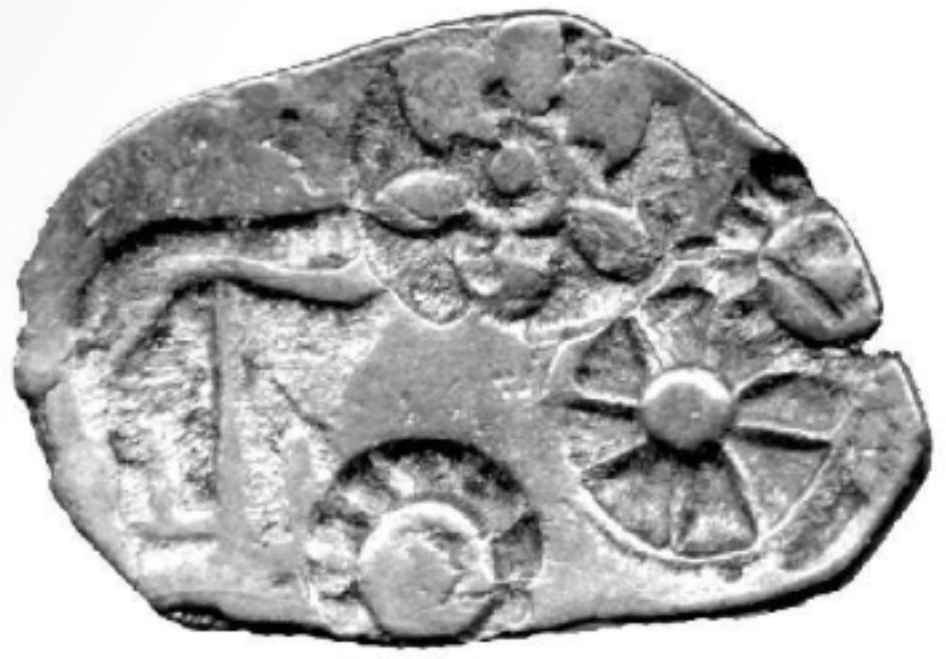

264/12a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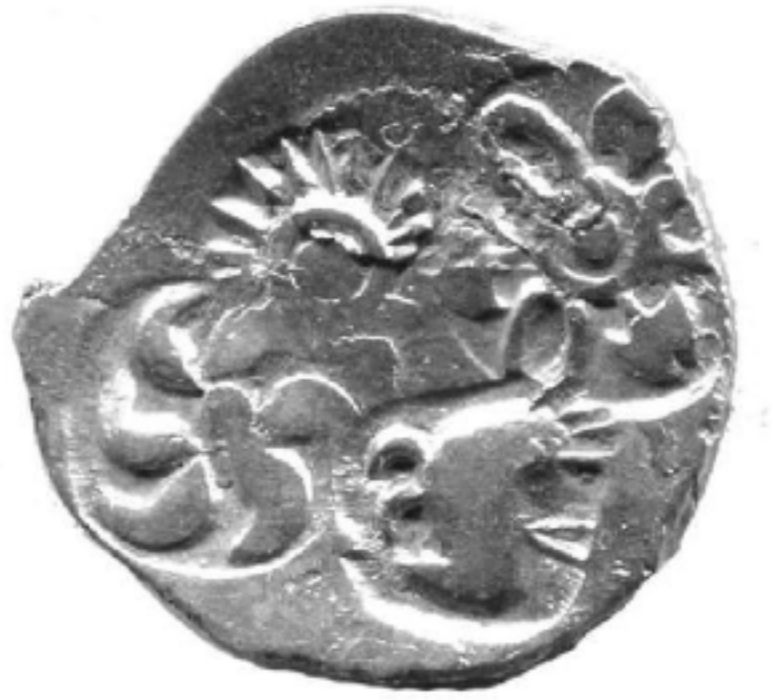
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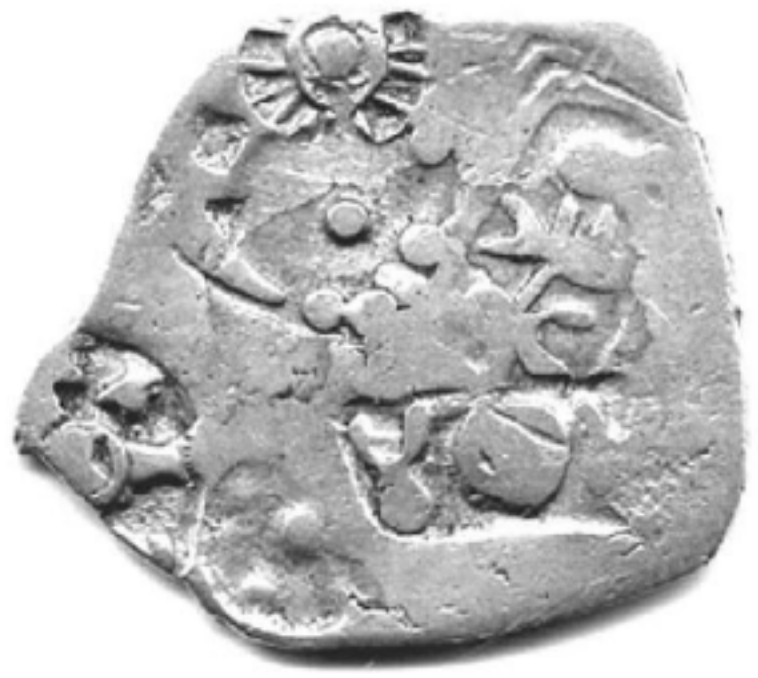
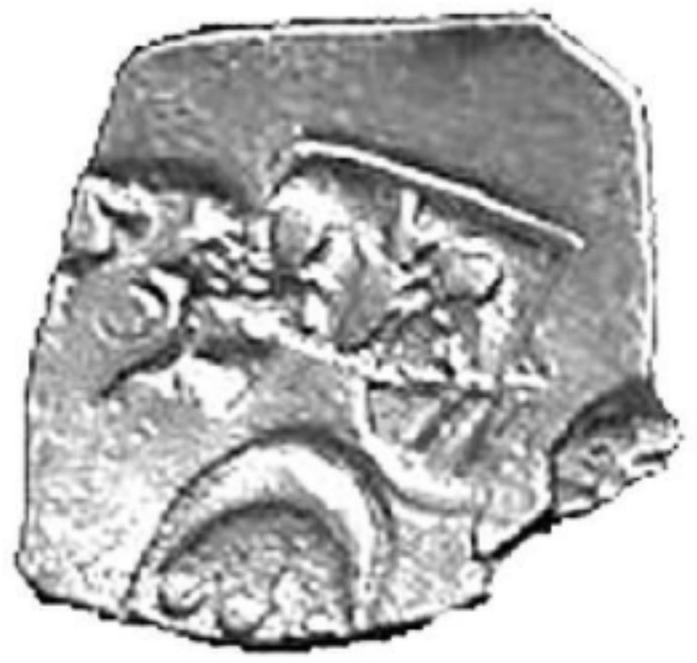
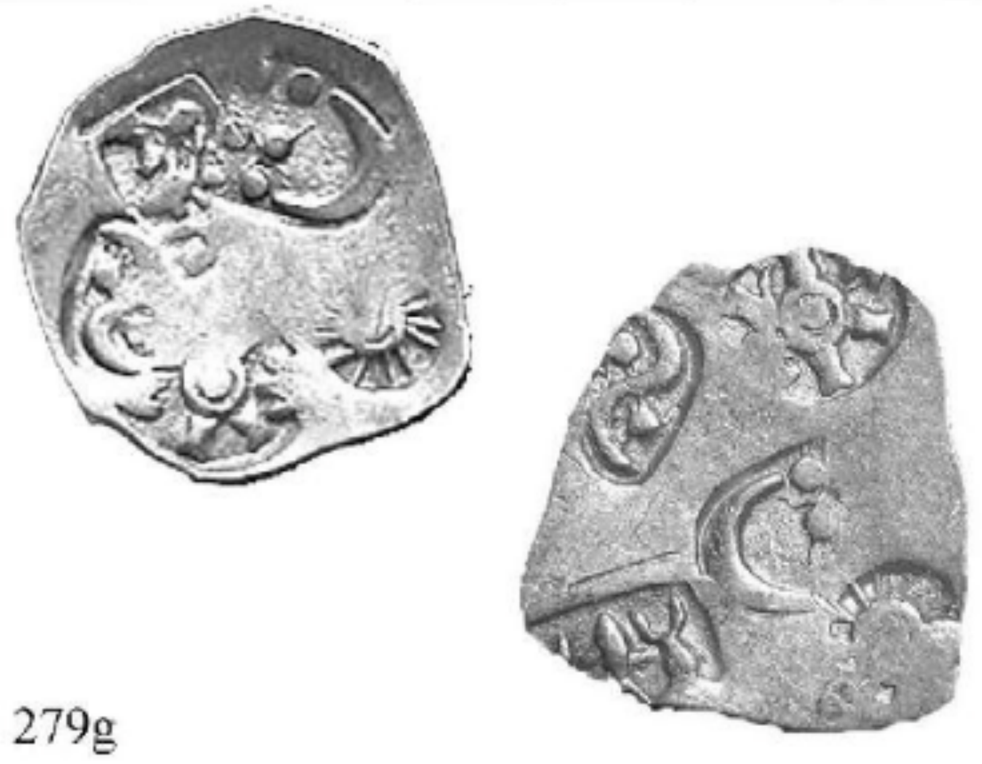
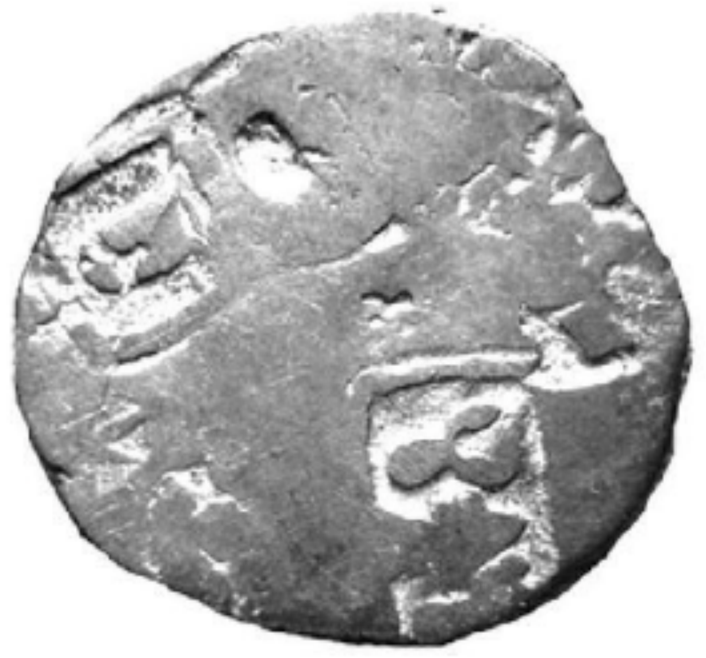

279


279c


279g


279h

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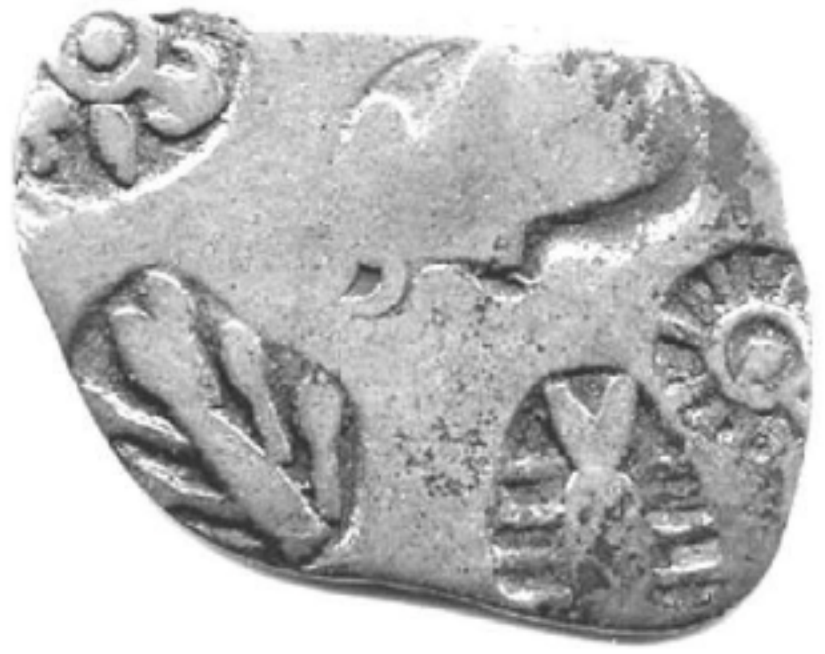
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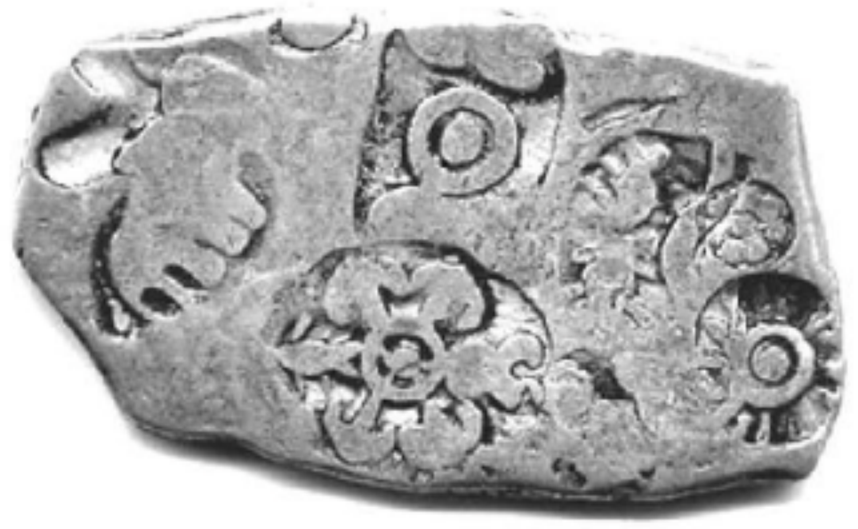
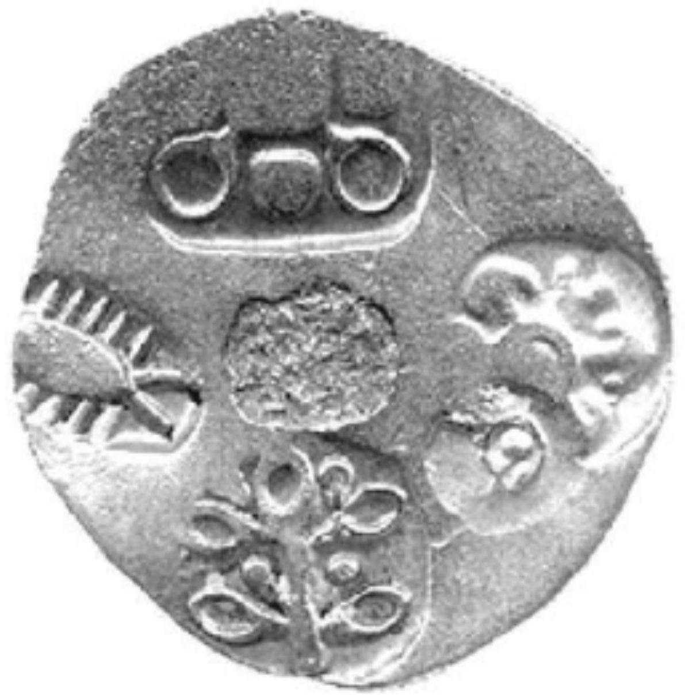

267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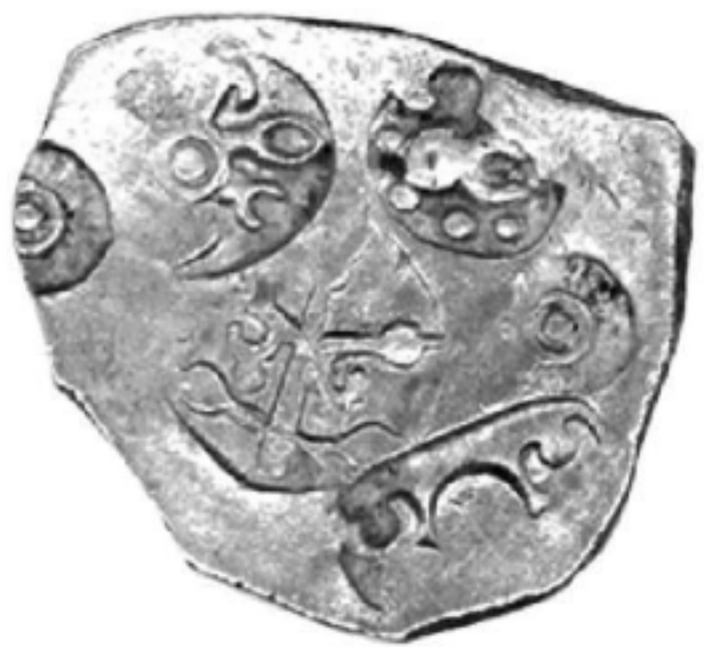
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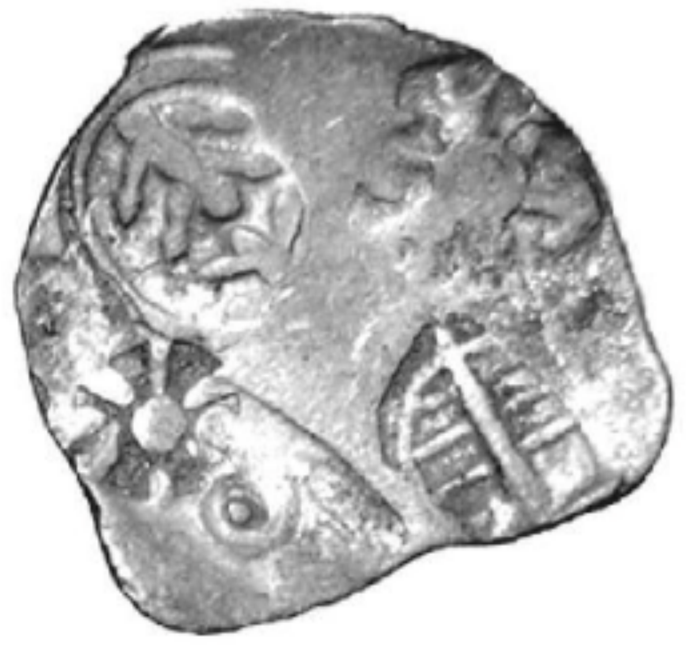
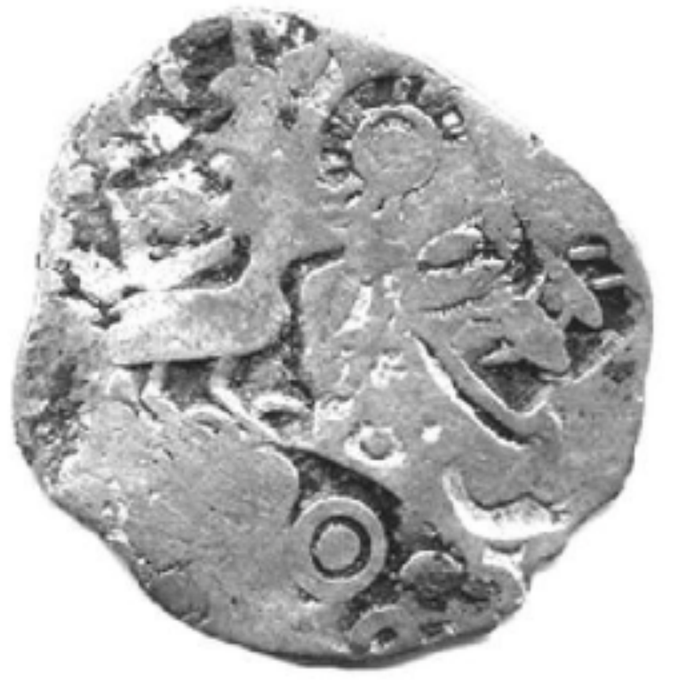

271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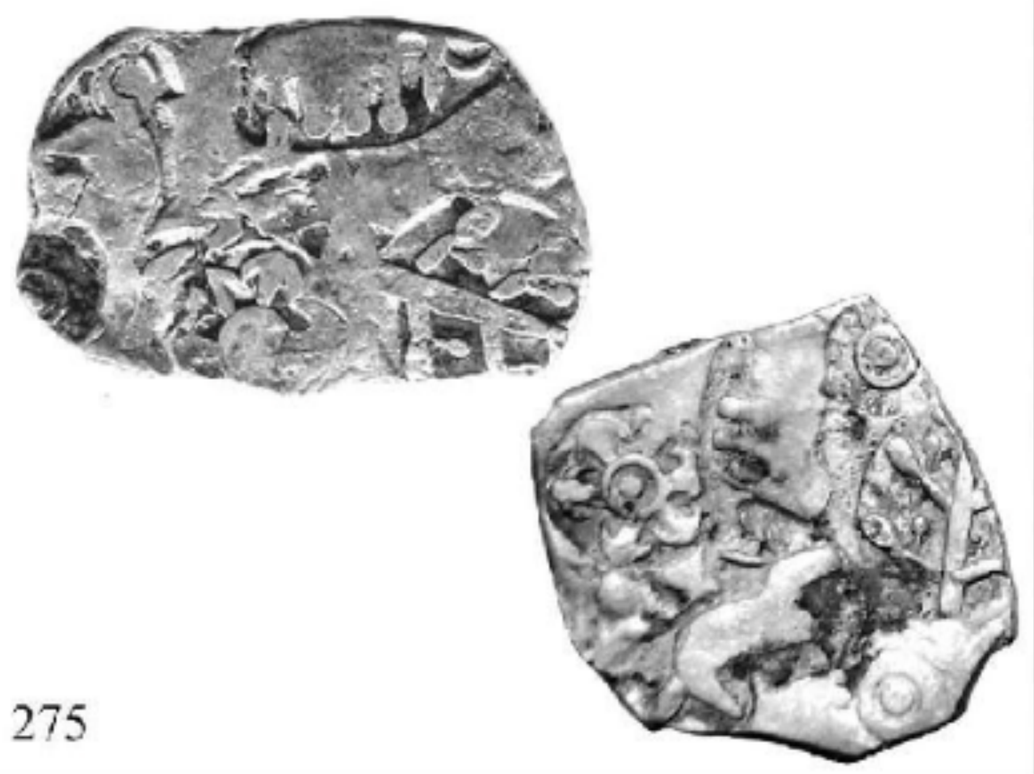
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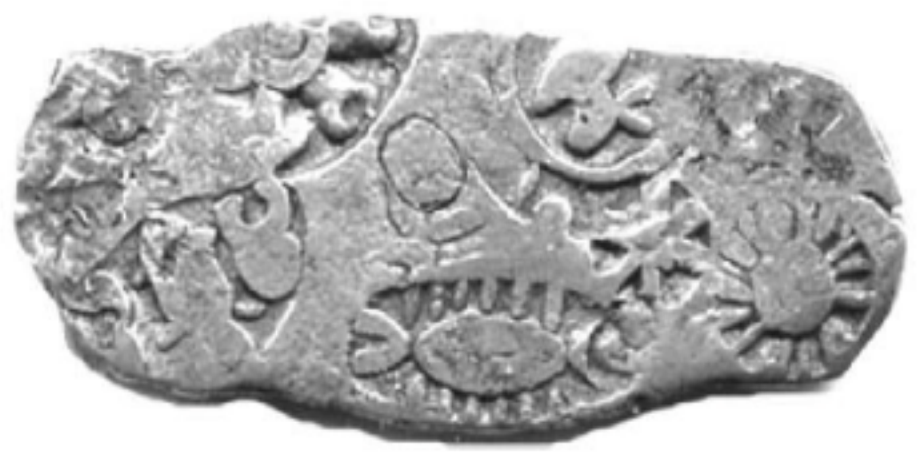
278

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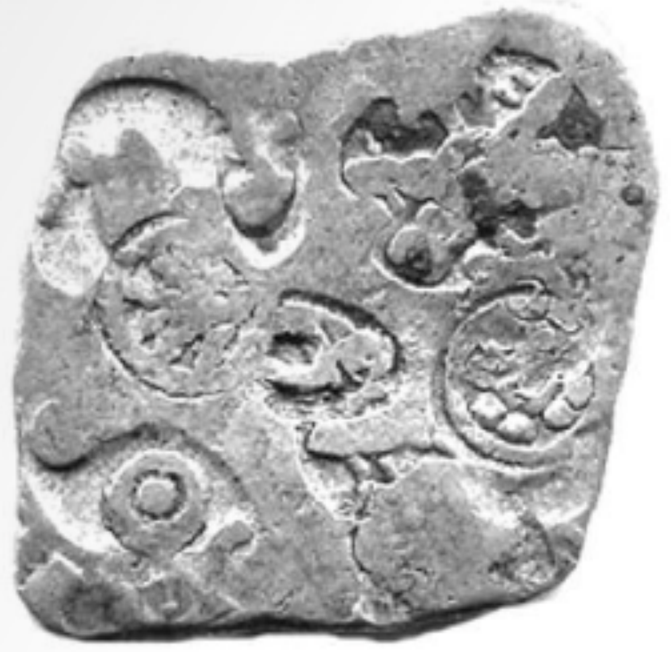
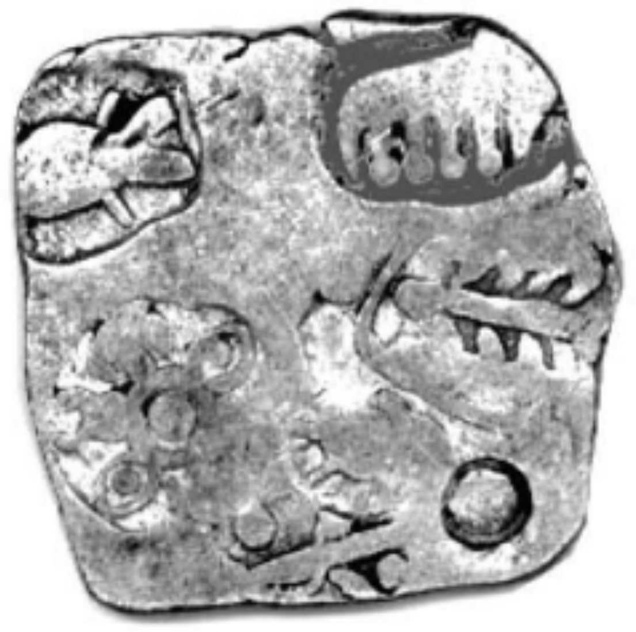
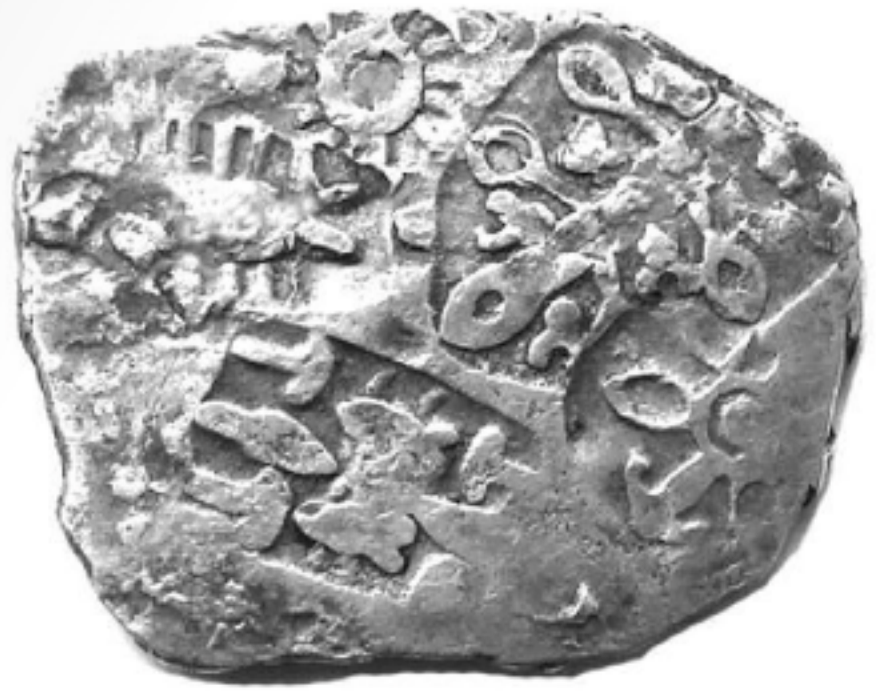


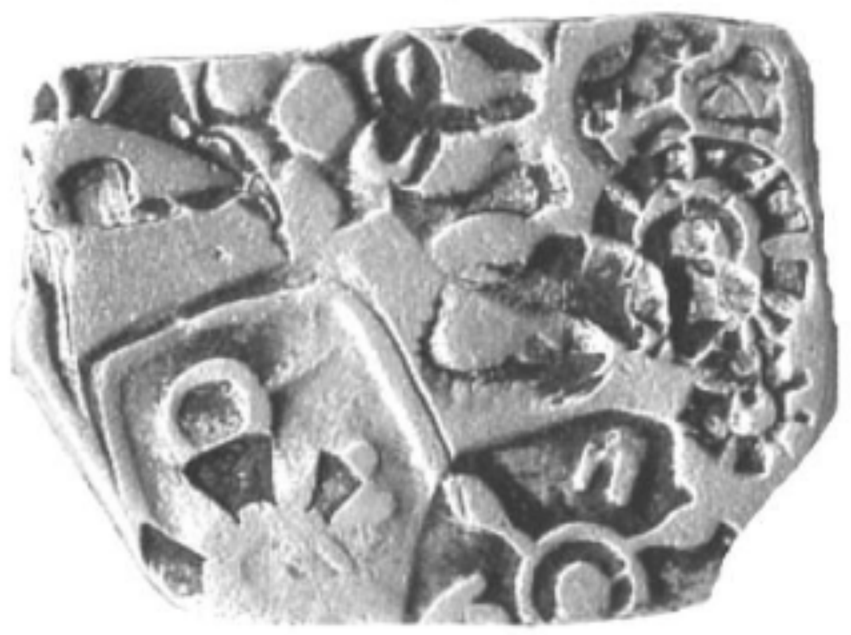
281



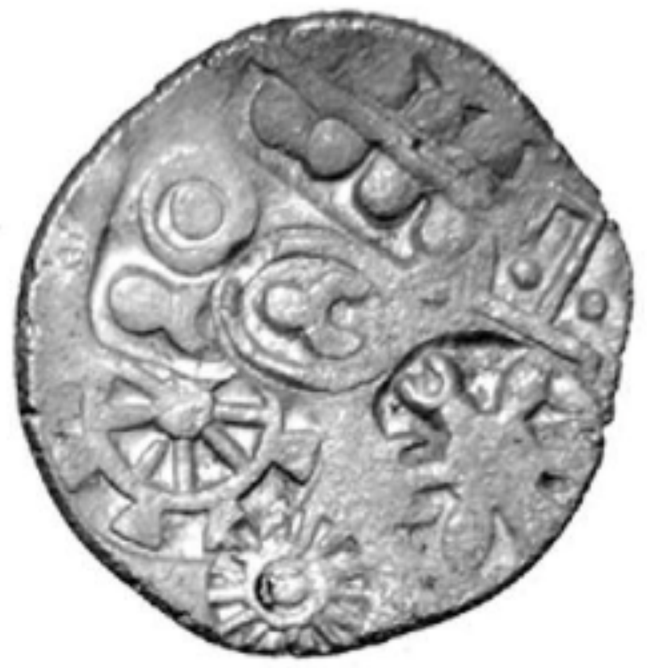
283a



284



286a



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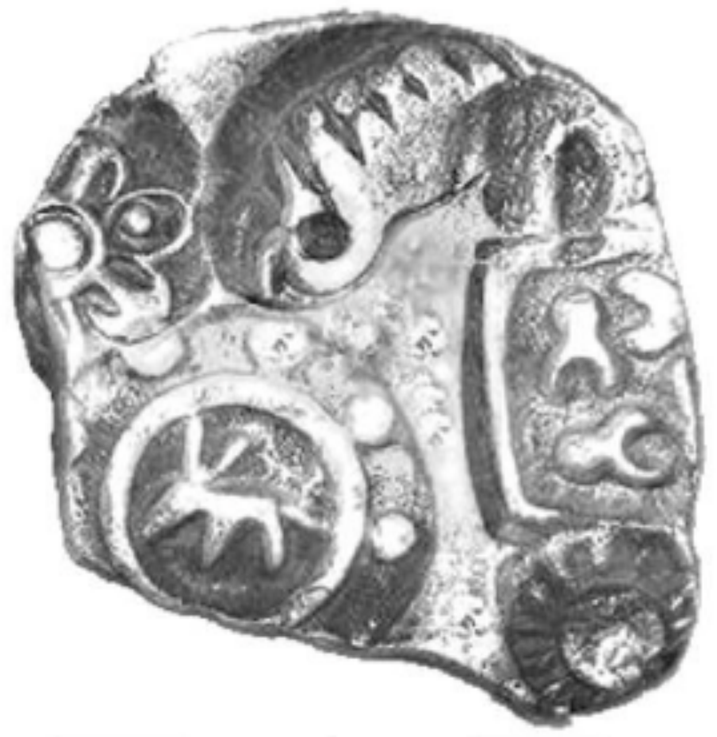
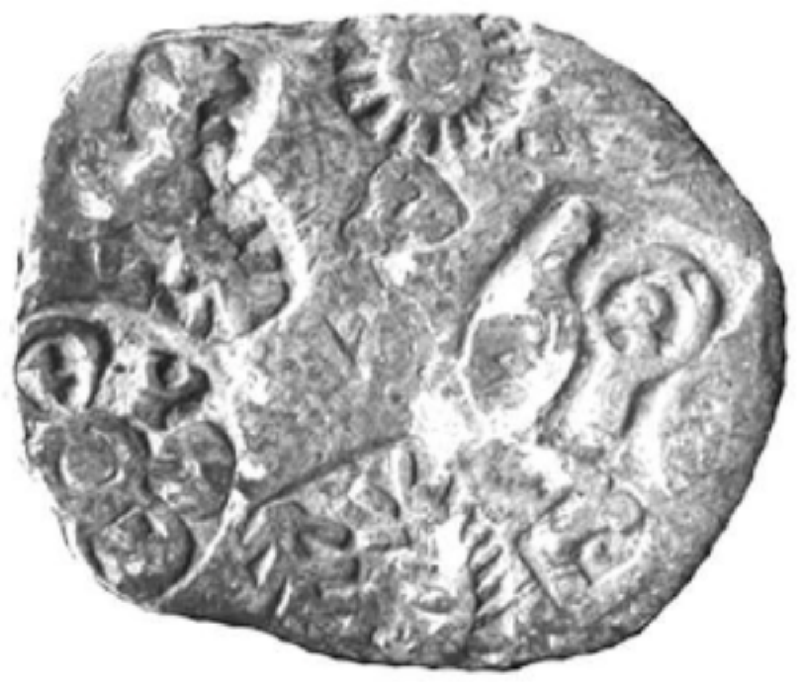
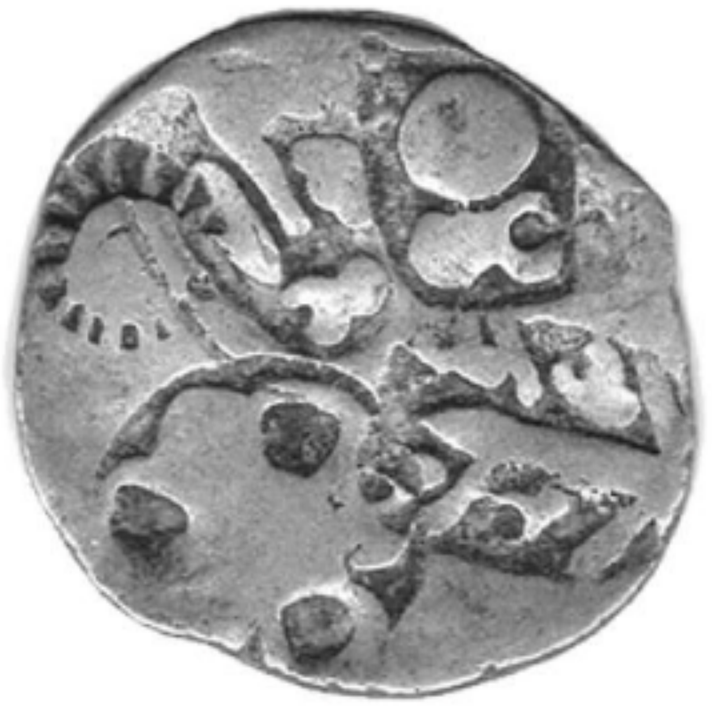


290a



294a



297a

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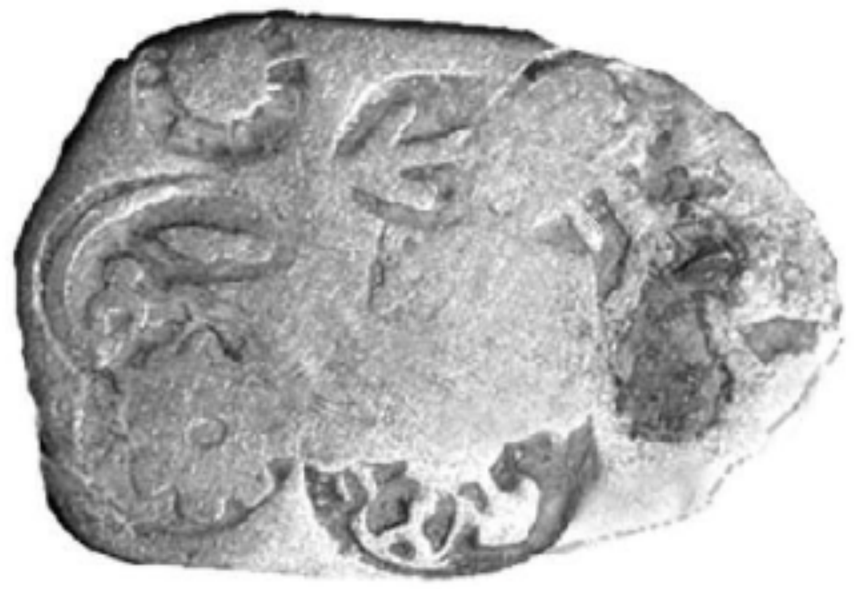

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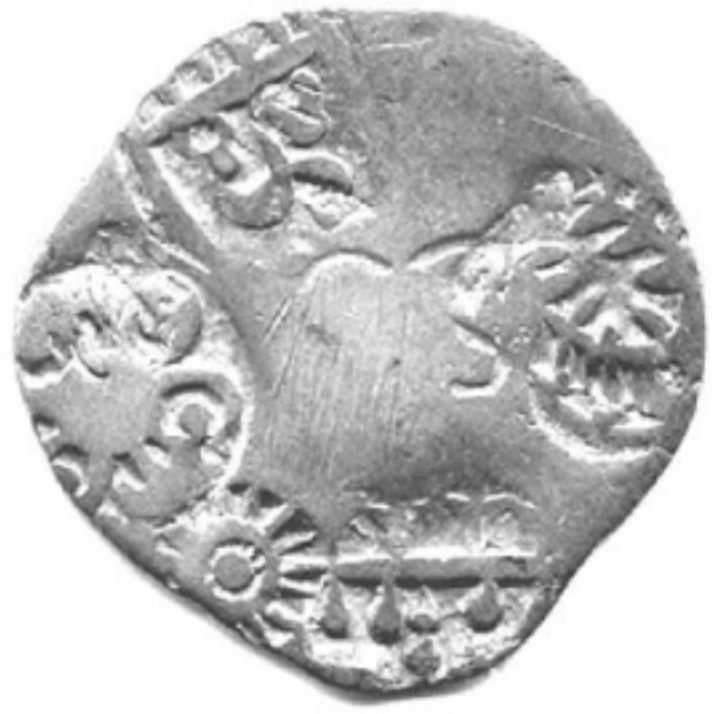
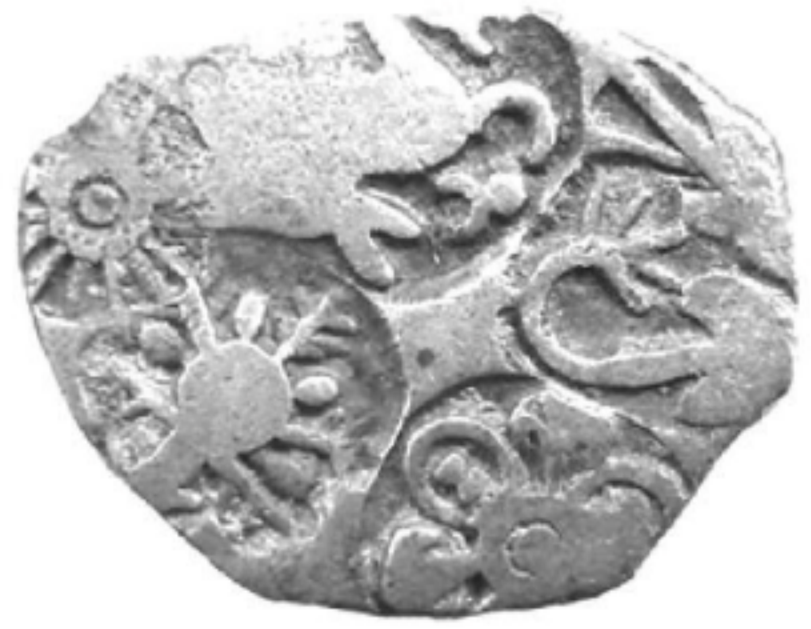
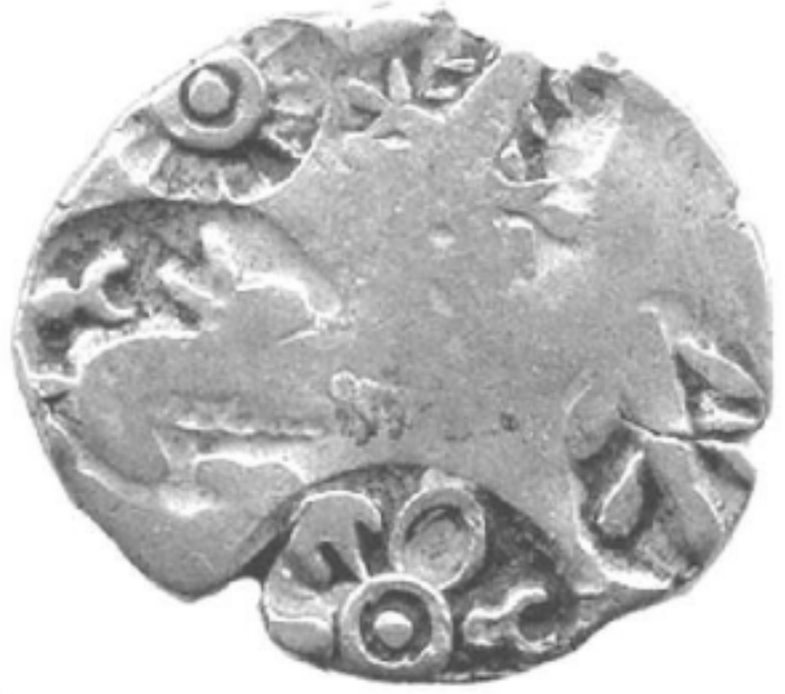


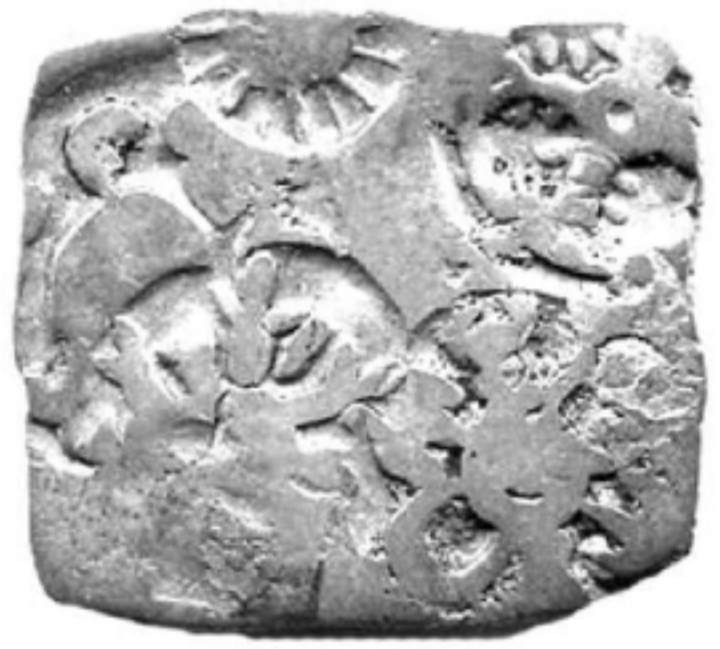
304a



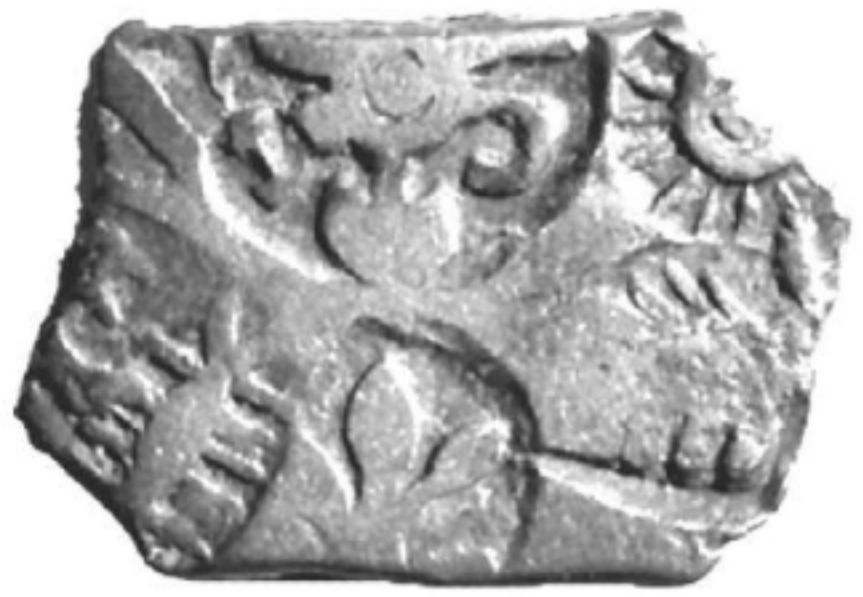
308a



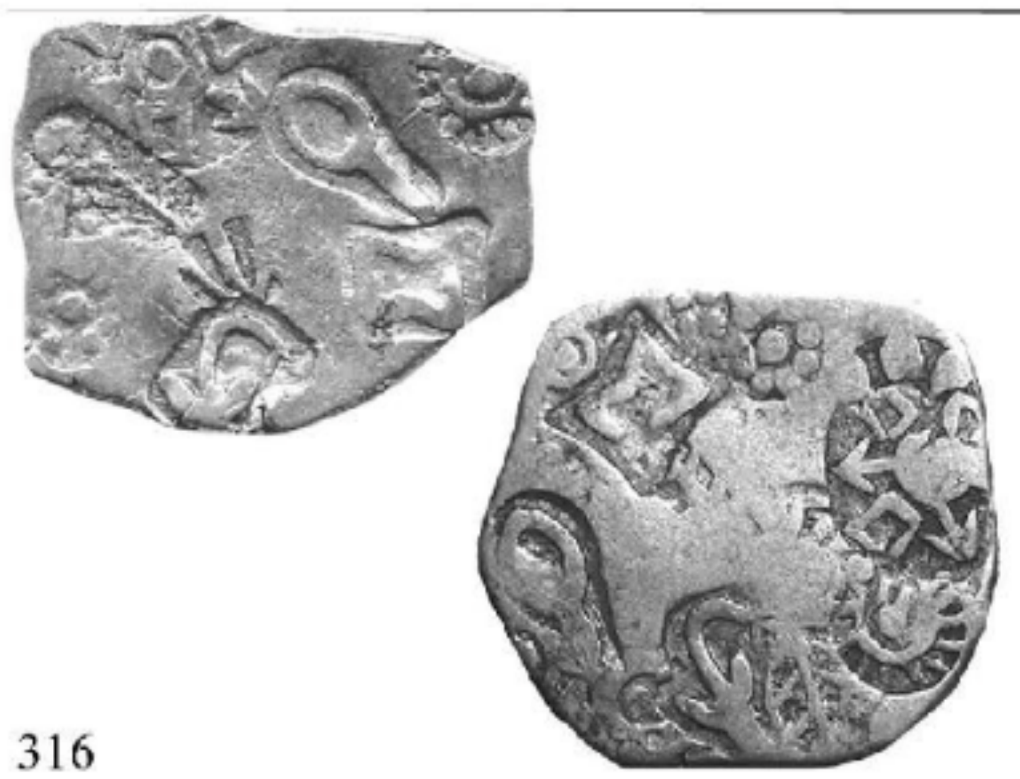
310



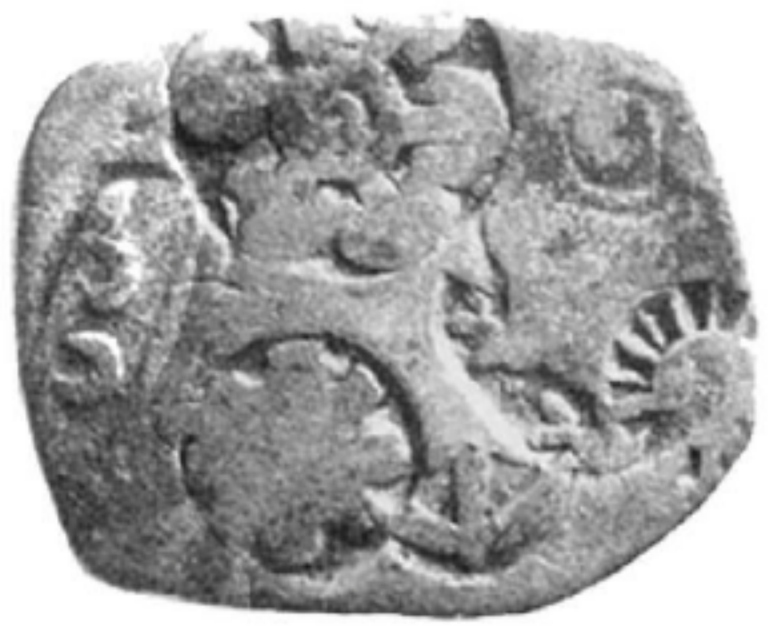
312



314a

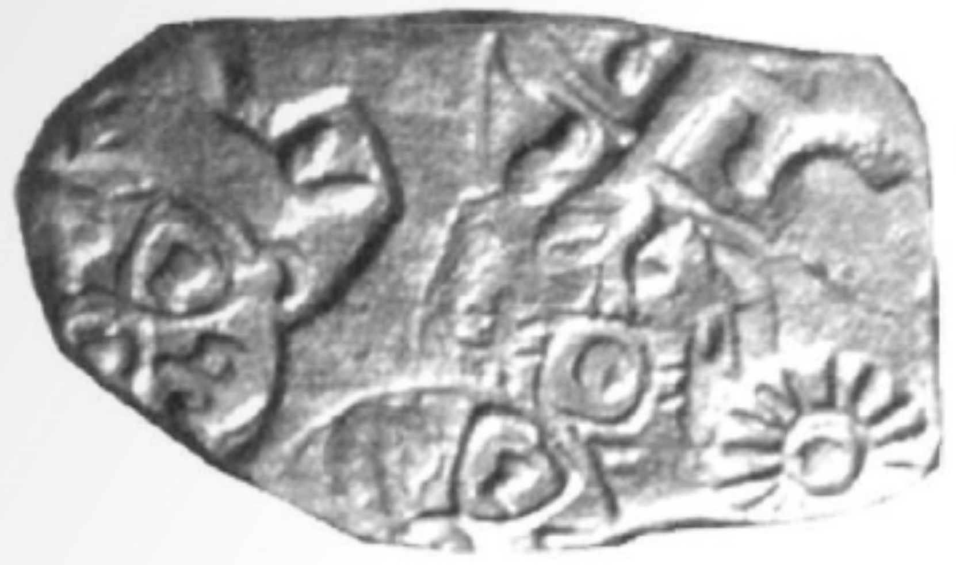


316



318

## ENLARGEMENTS SERIES III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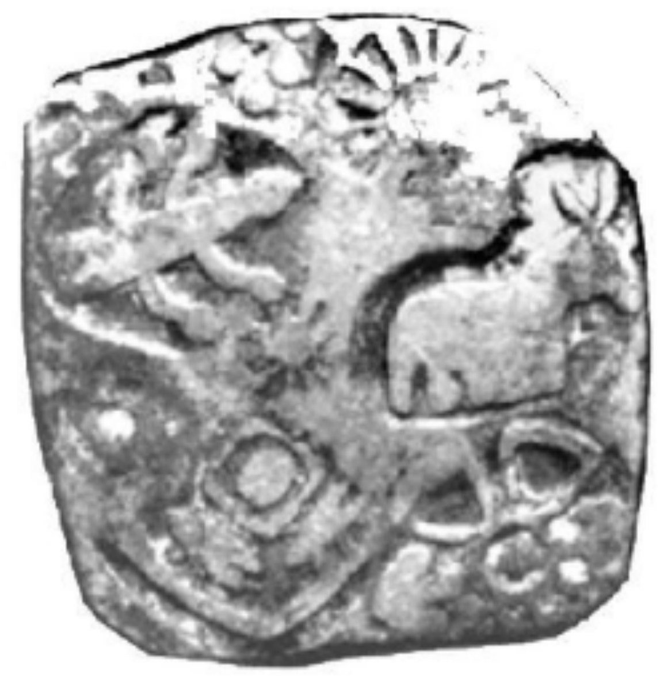
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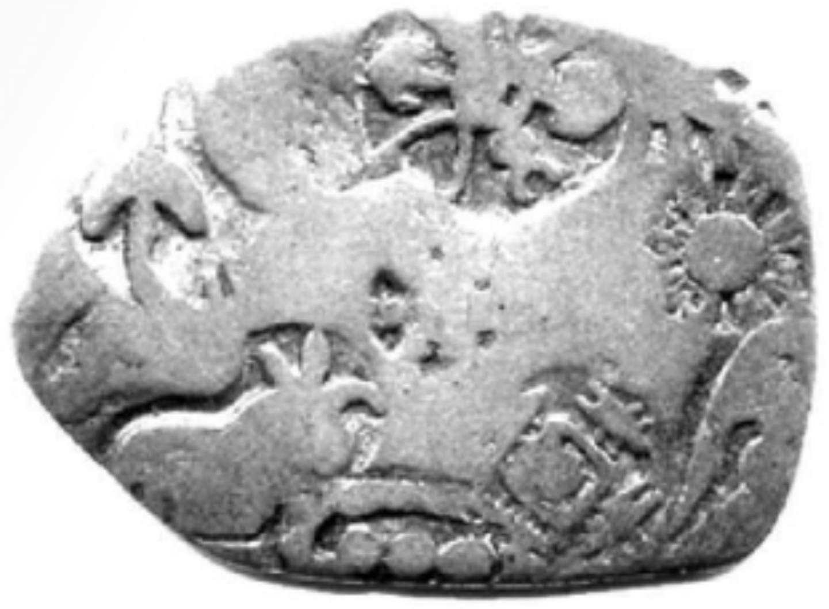
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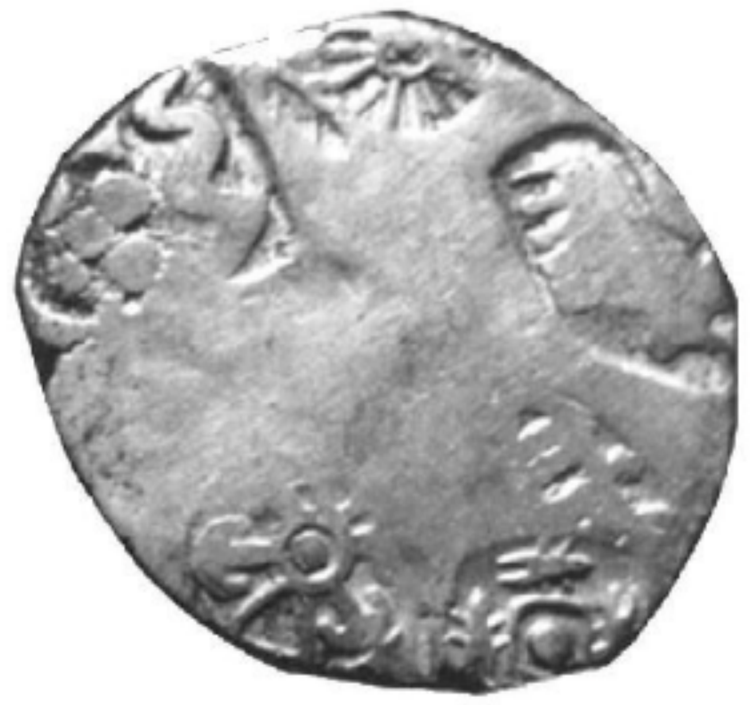
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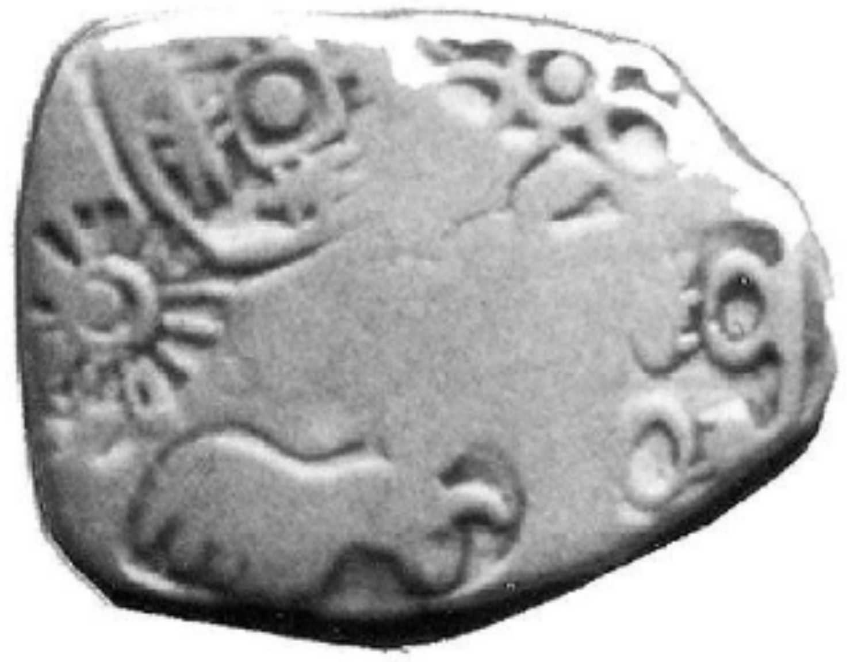
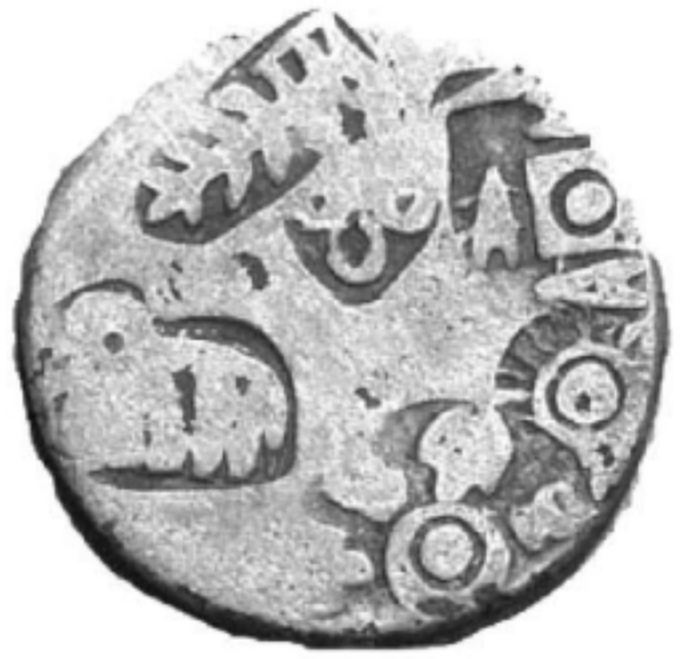
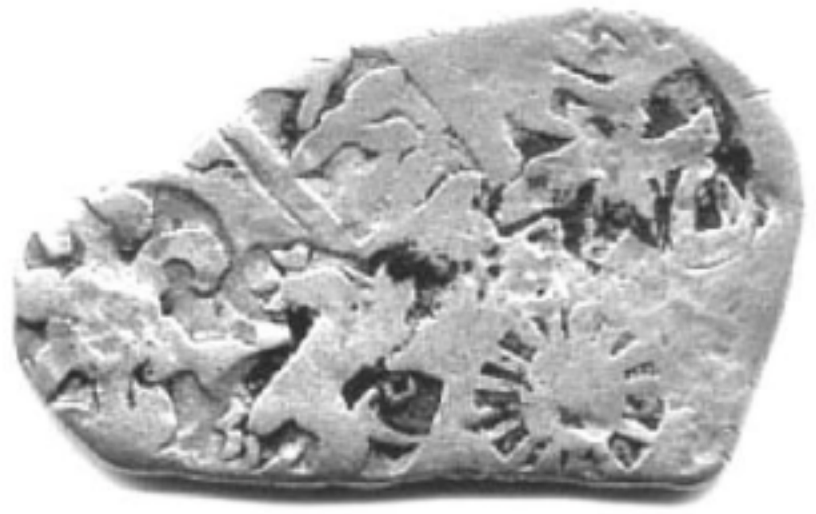
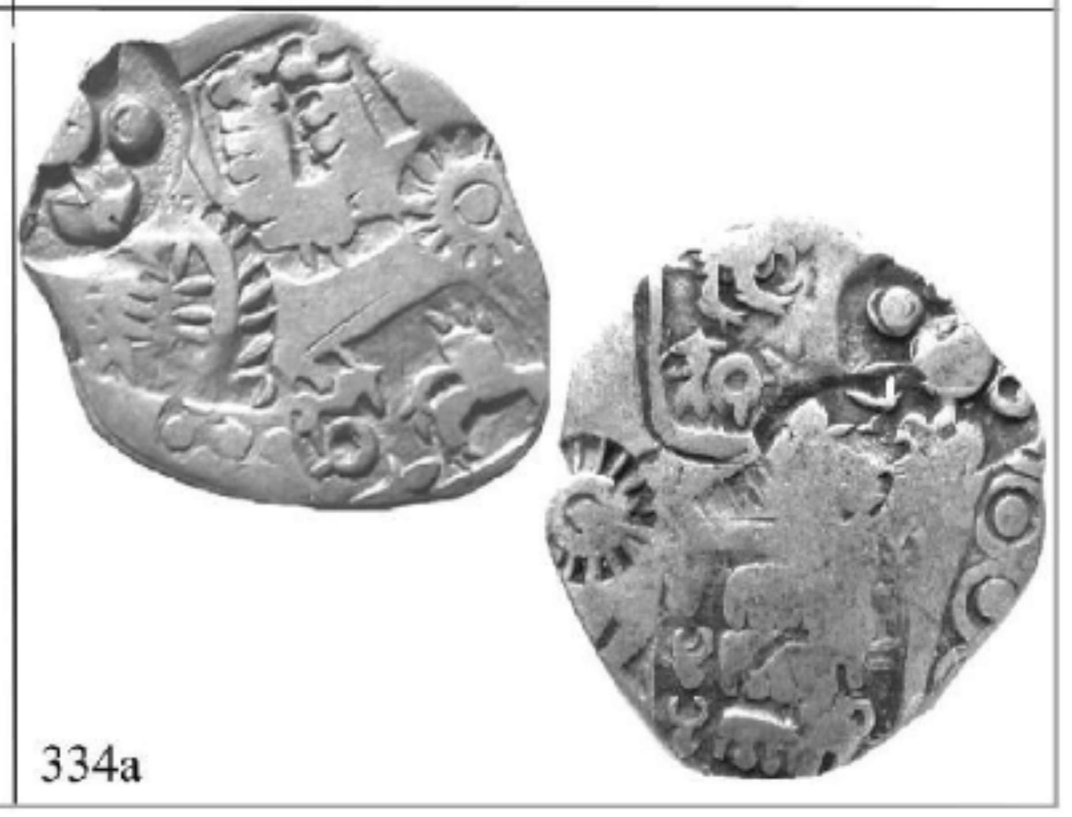

330a


332b


334


334a

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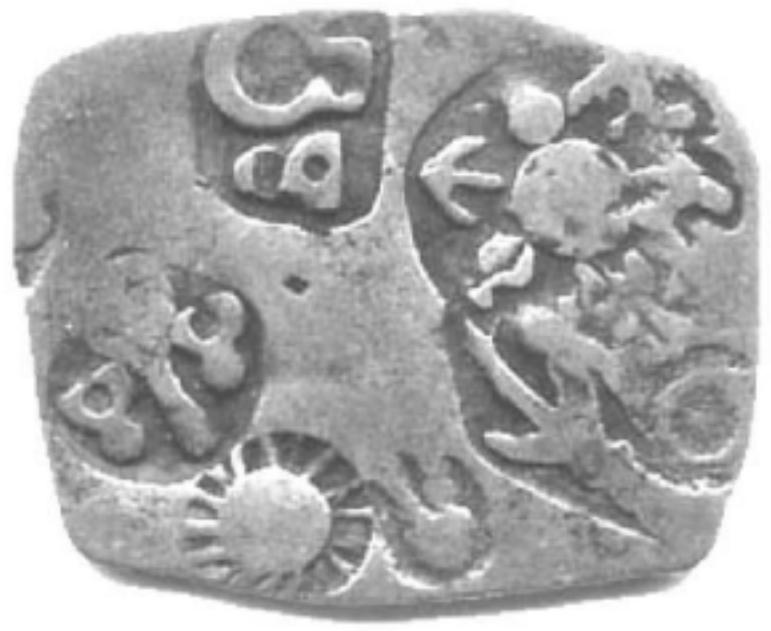
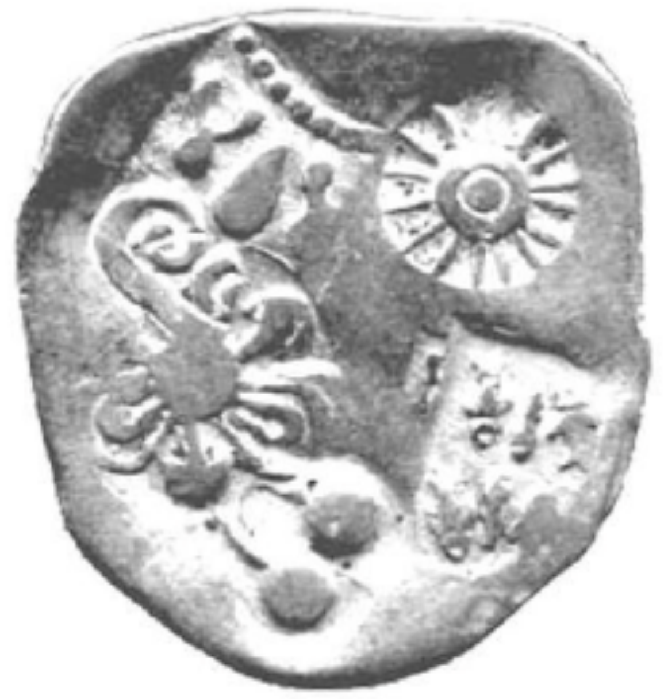
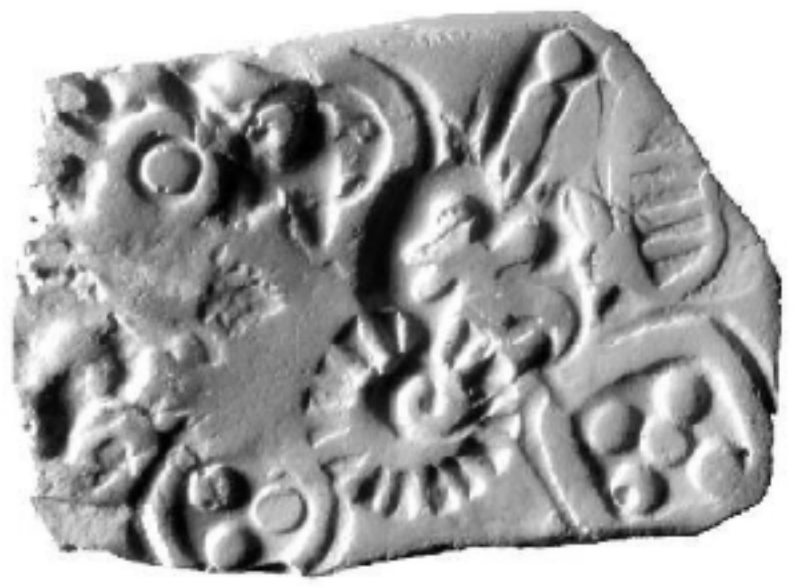
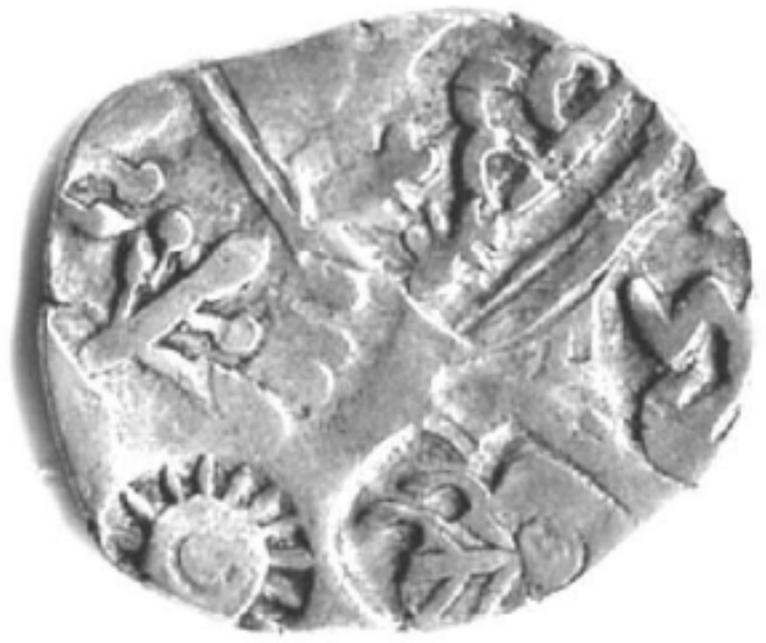
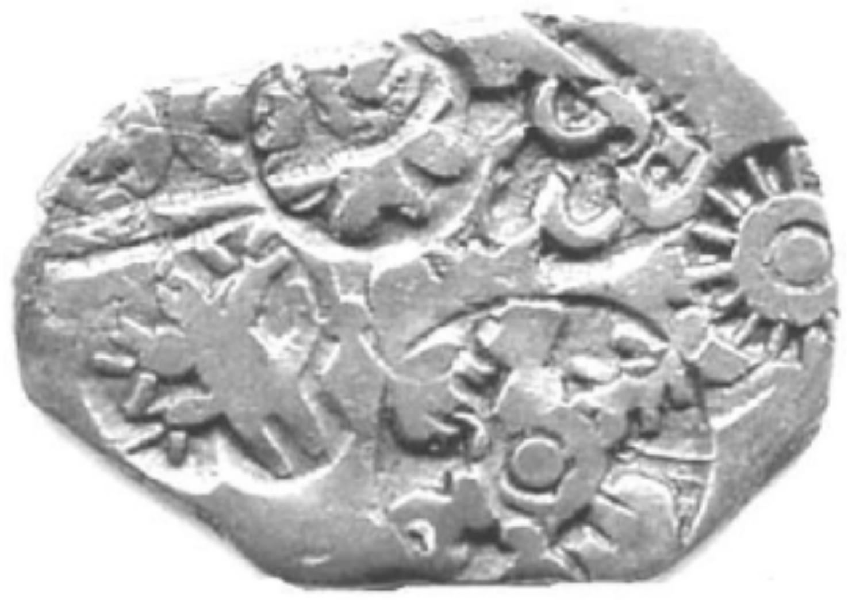

334b


334c


336


338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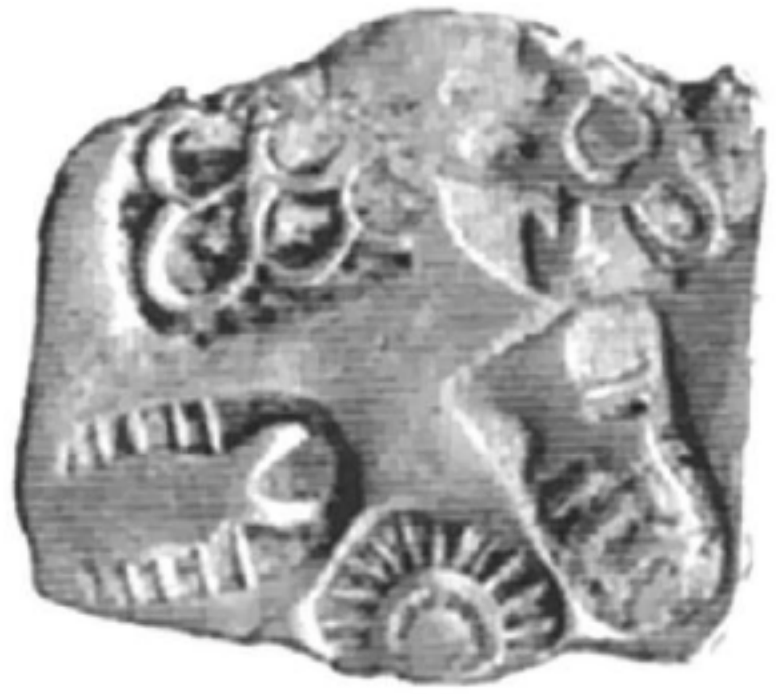
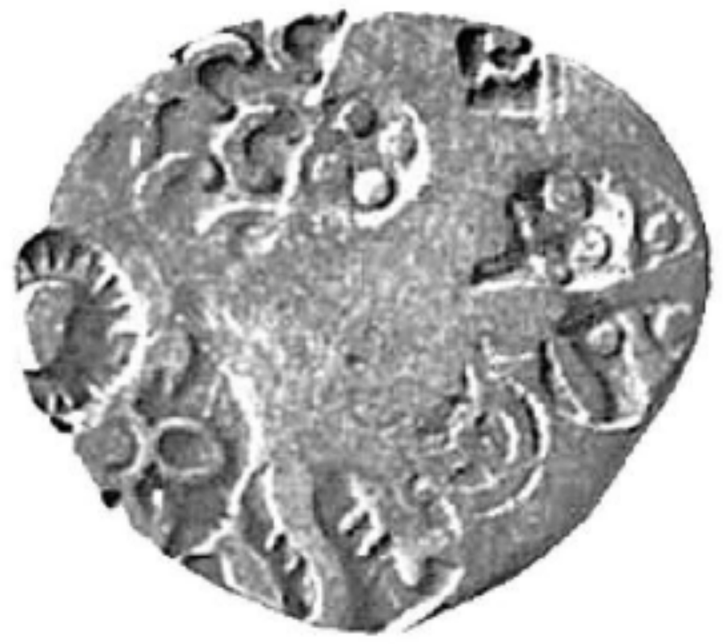

342a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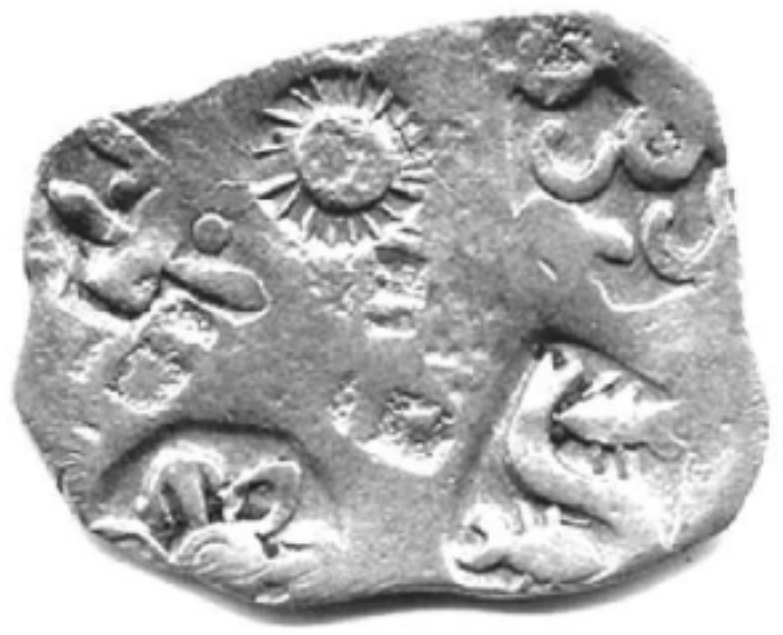
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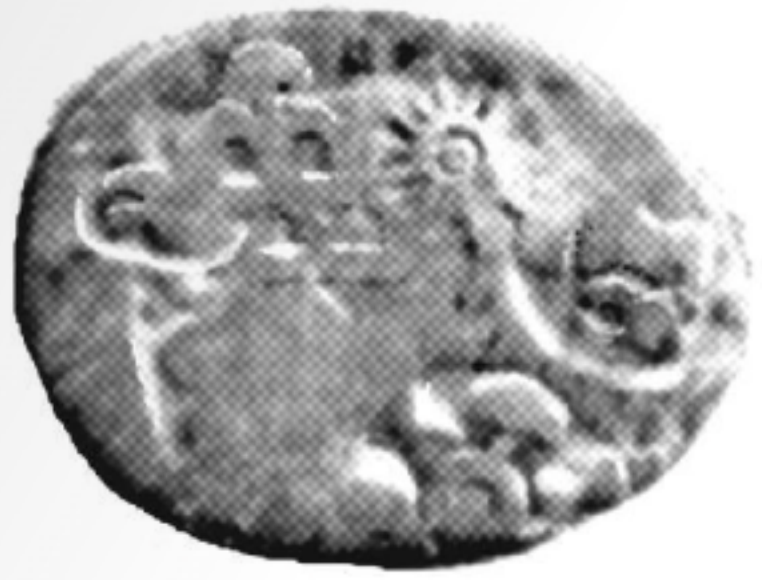
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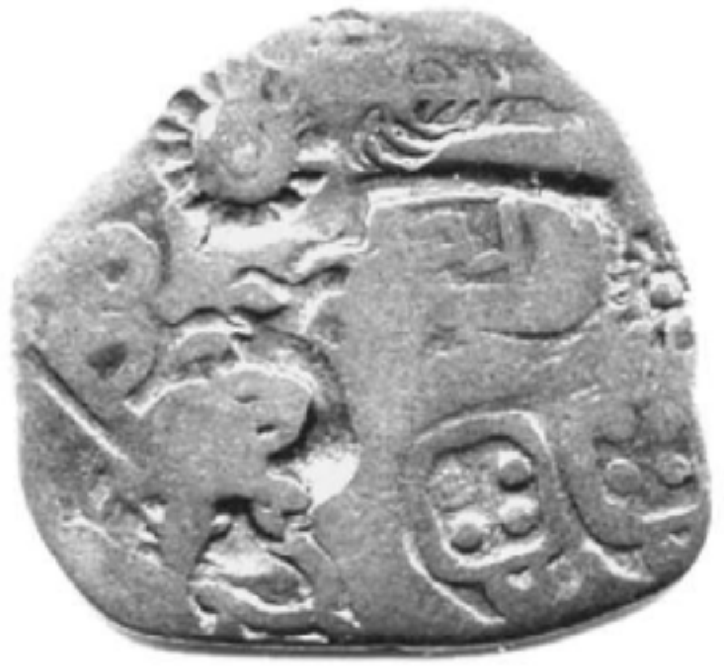
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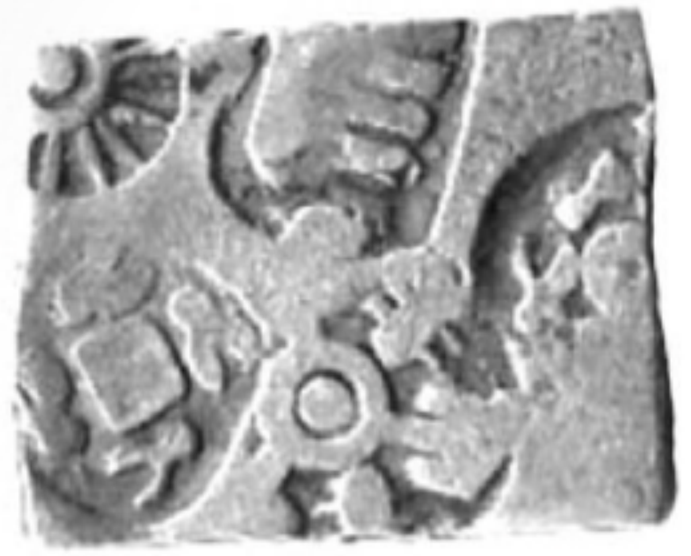
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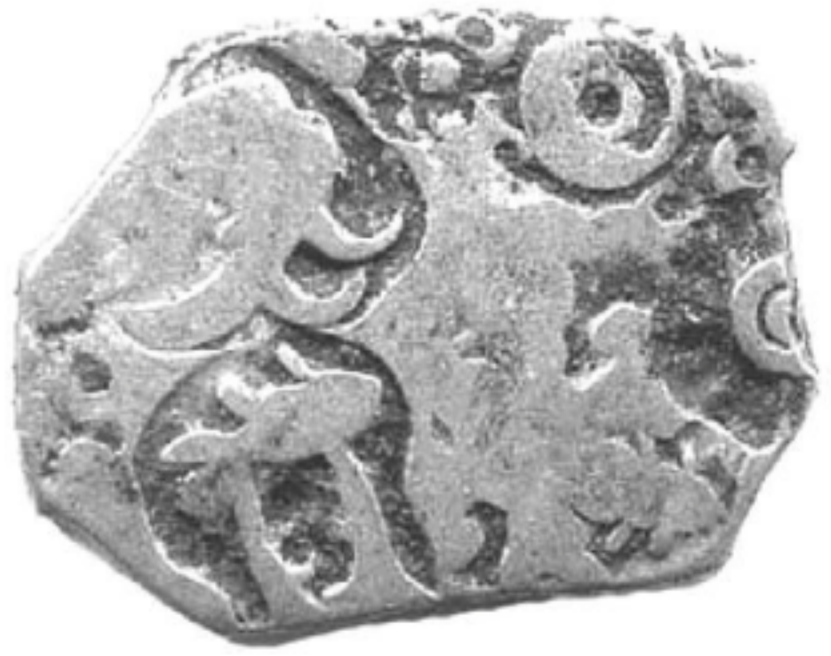
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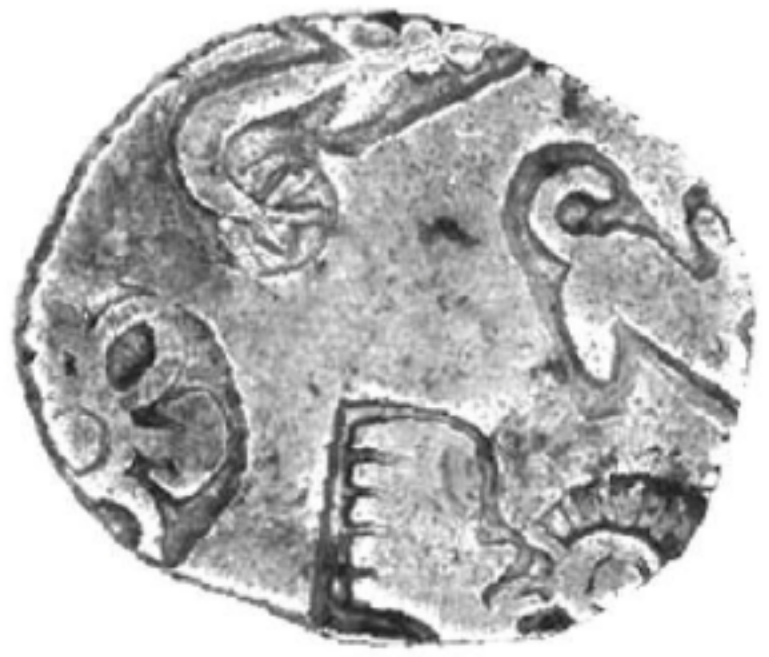
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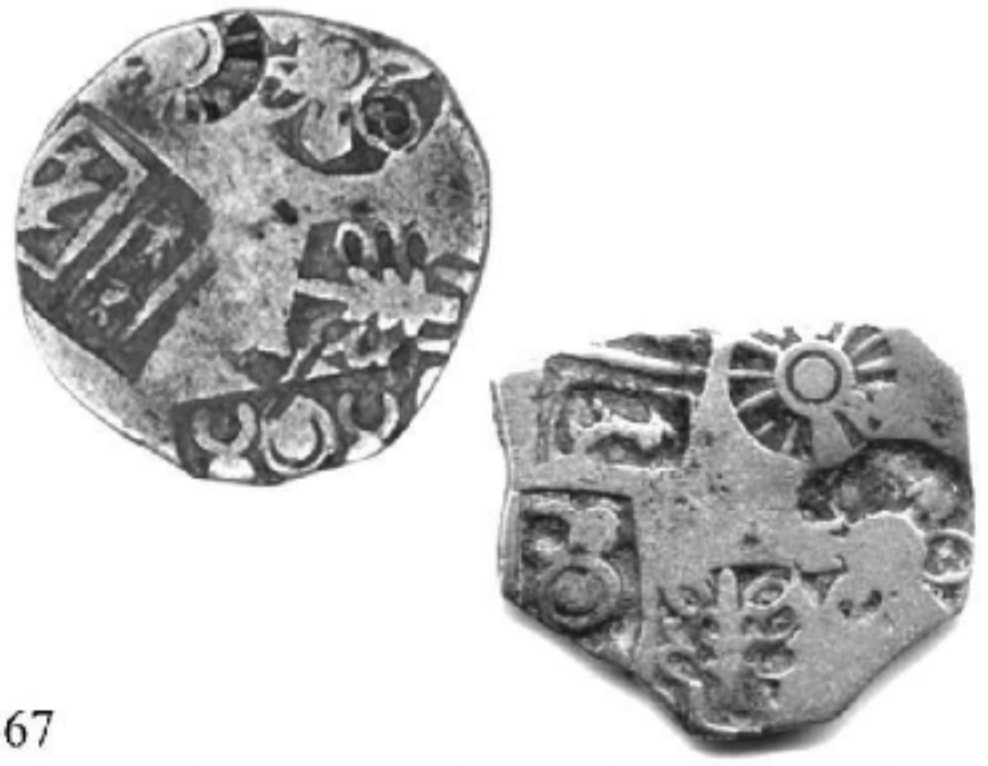
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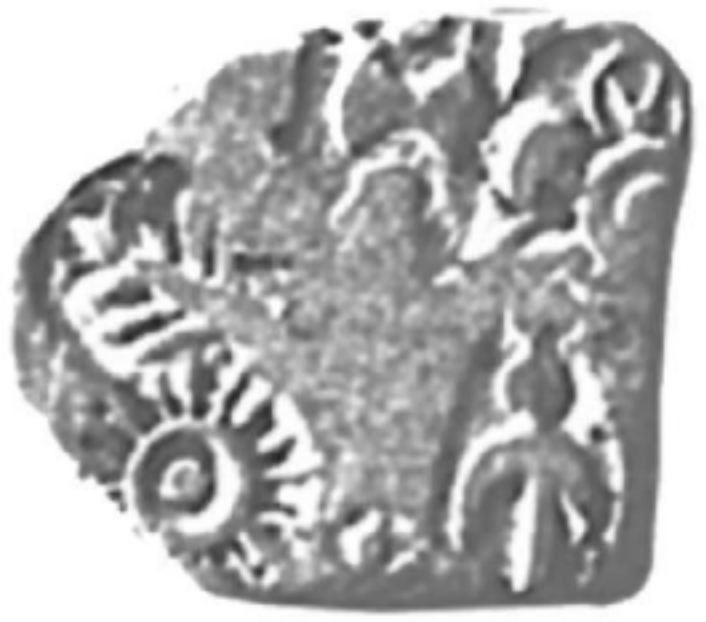
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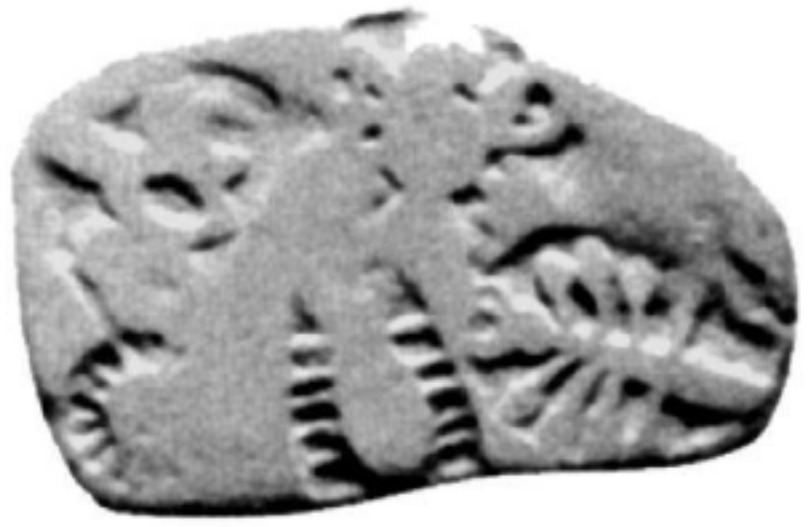
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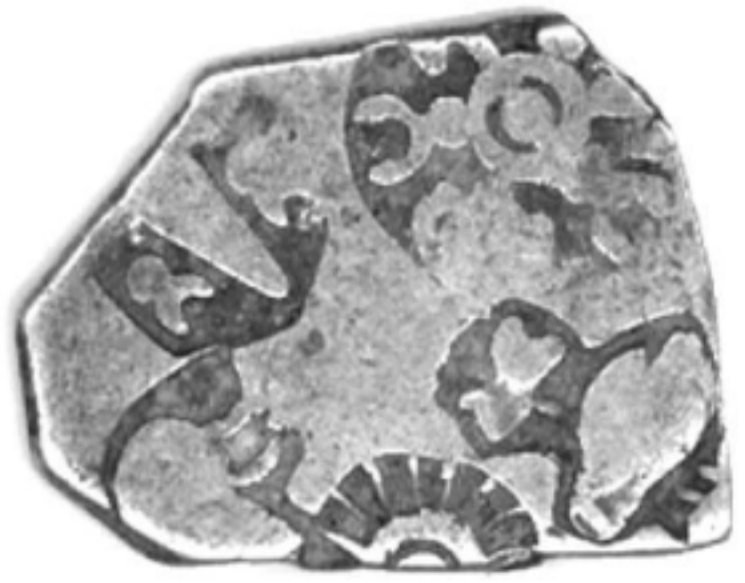
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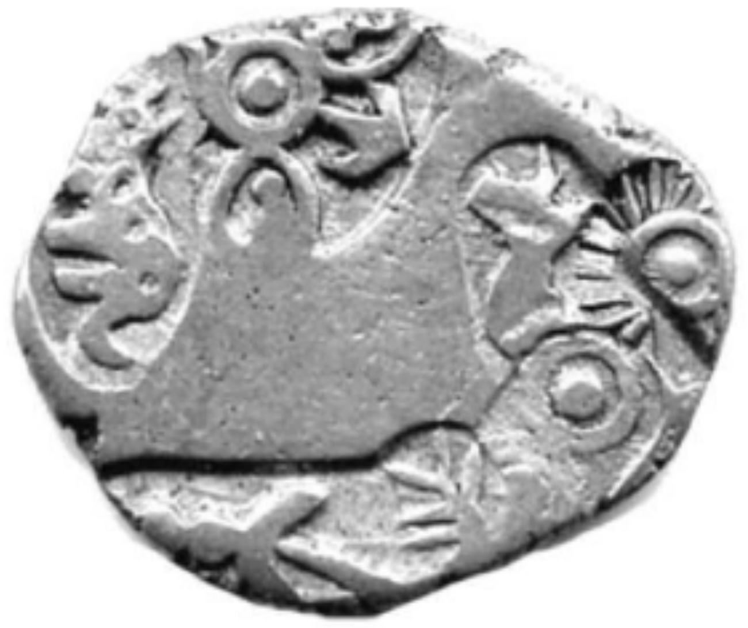
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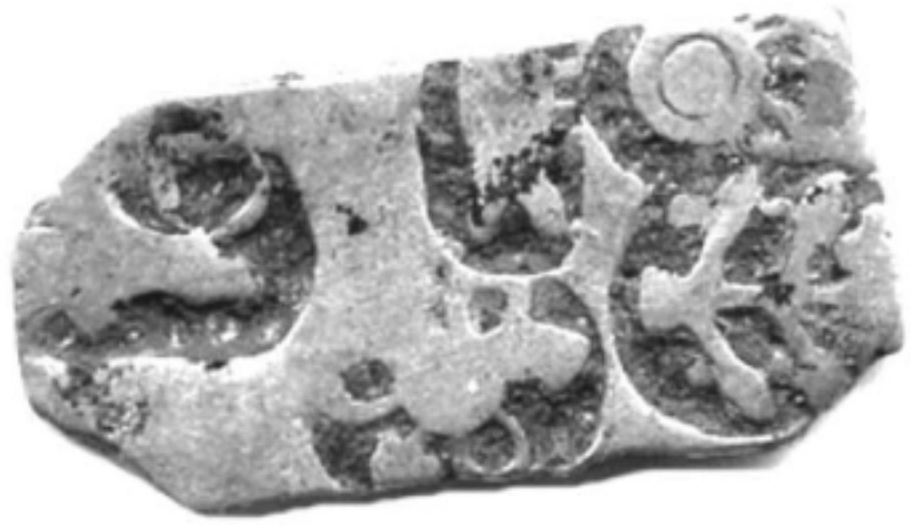
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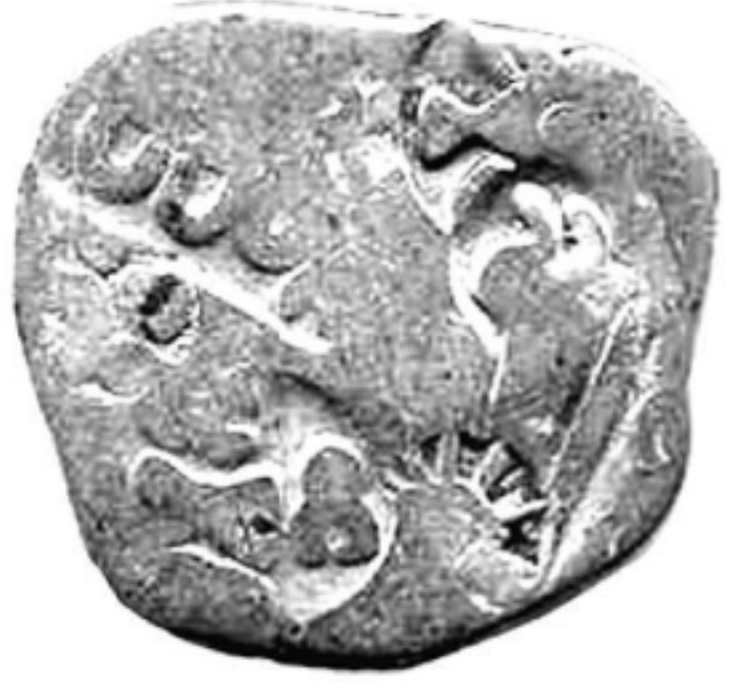
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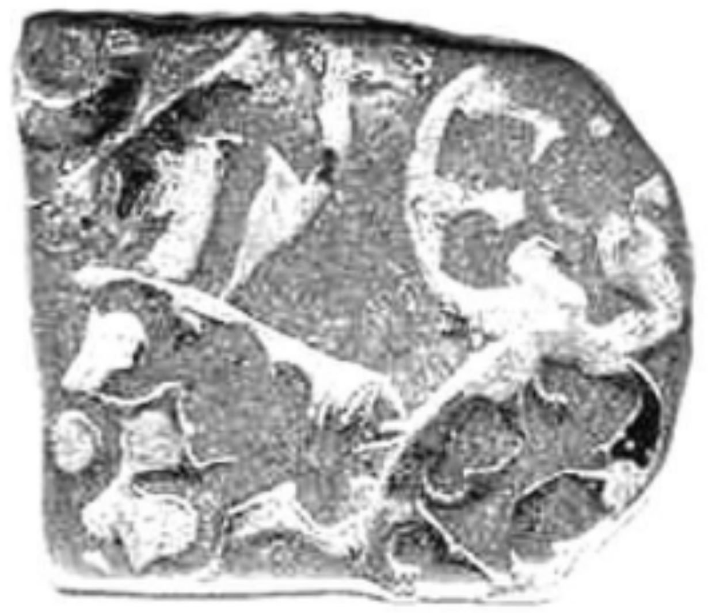
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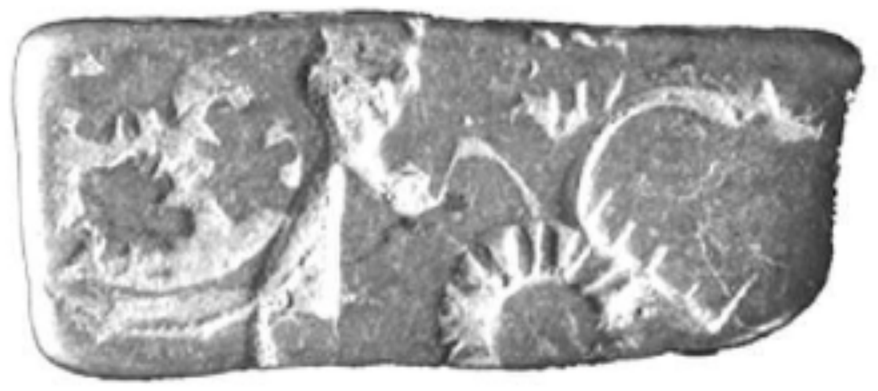
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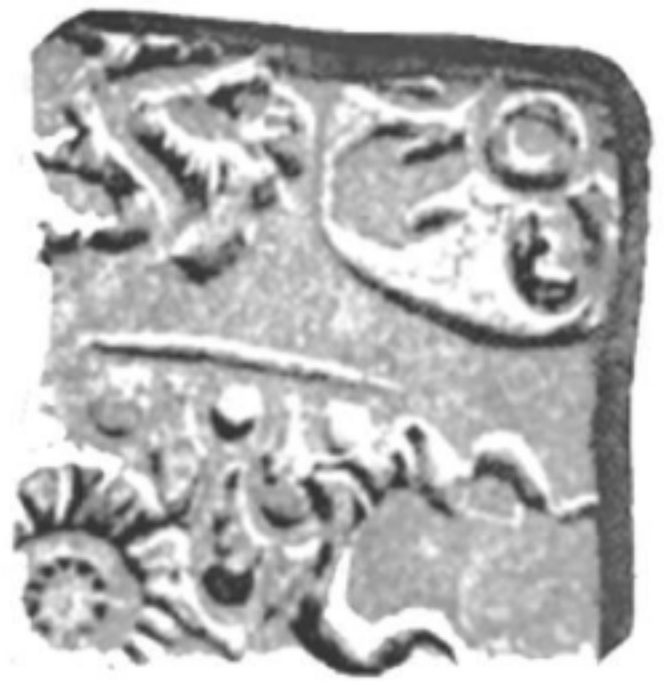
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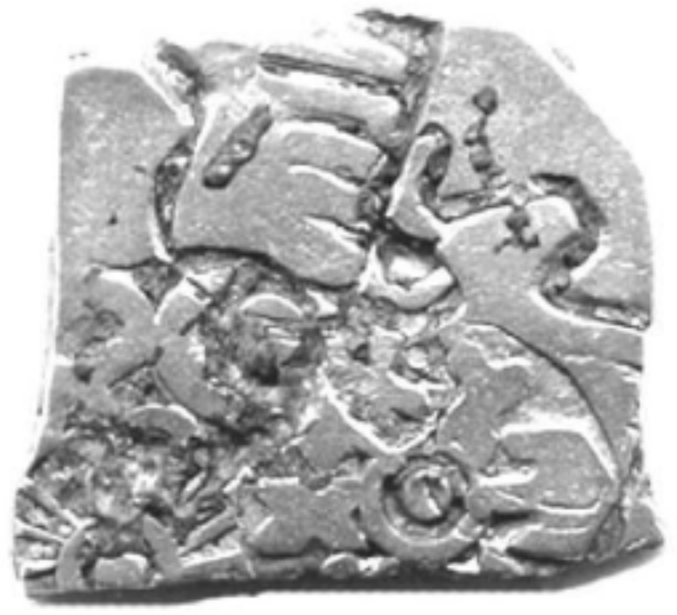
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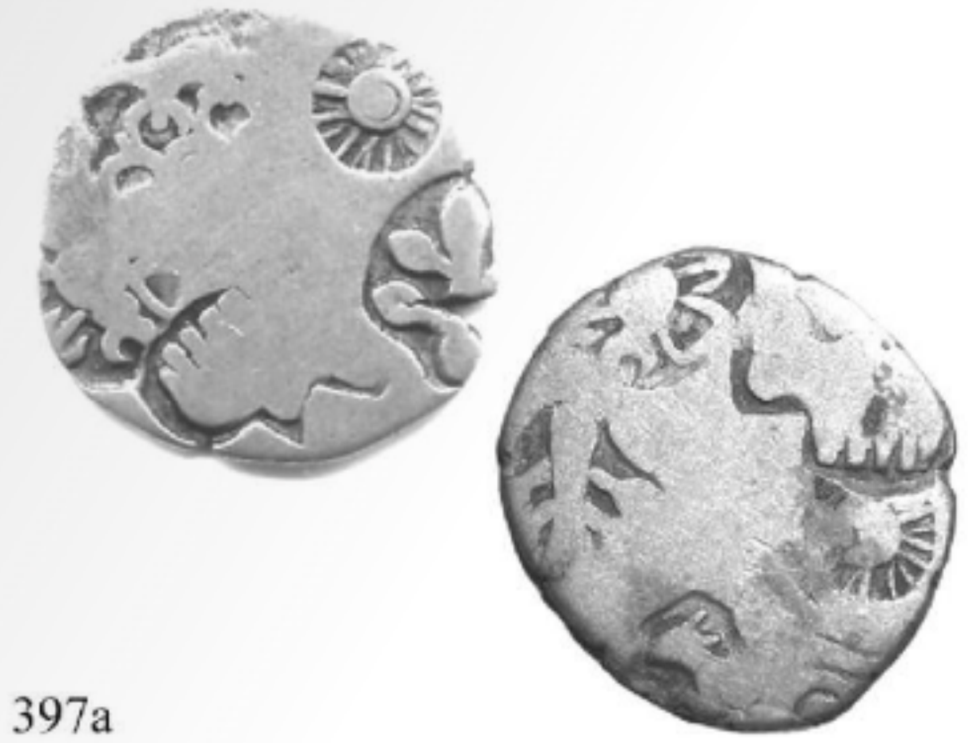
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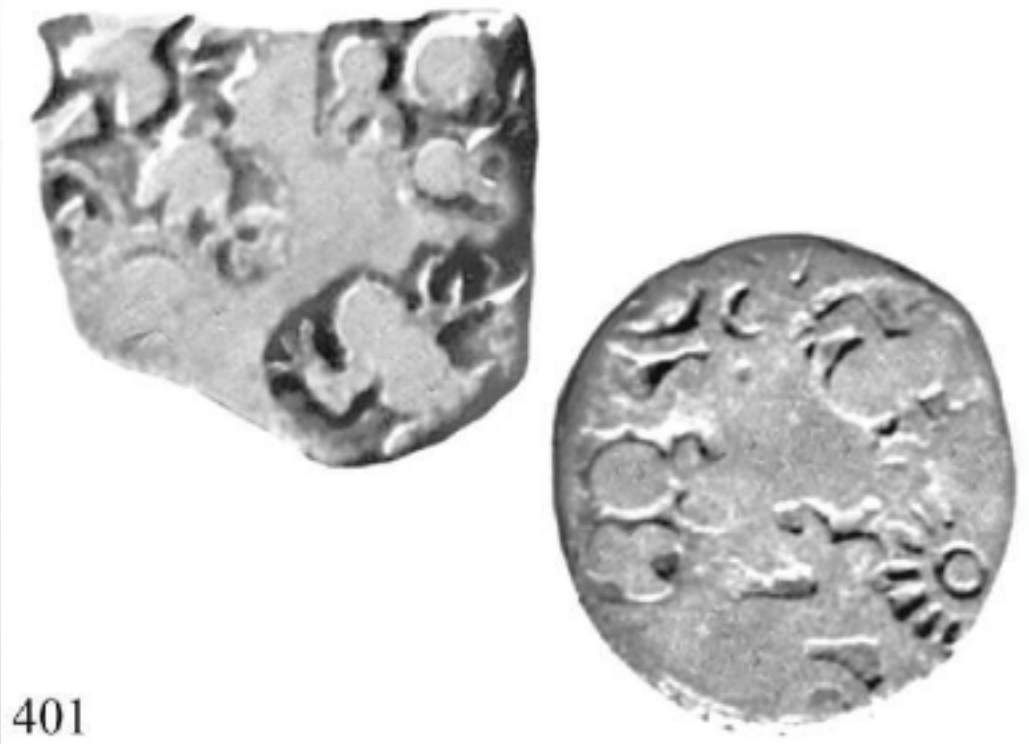
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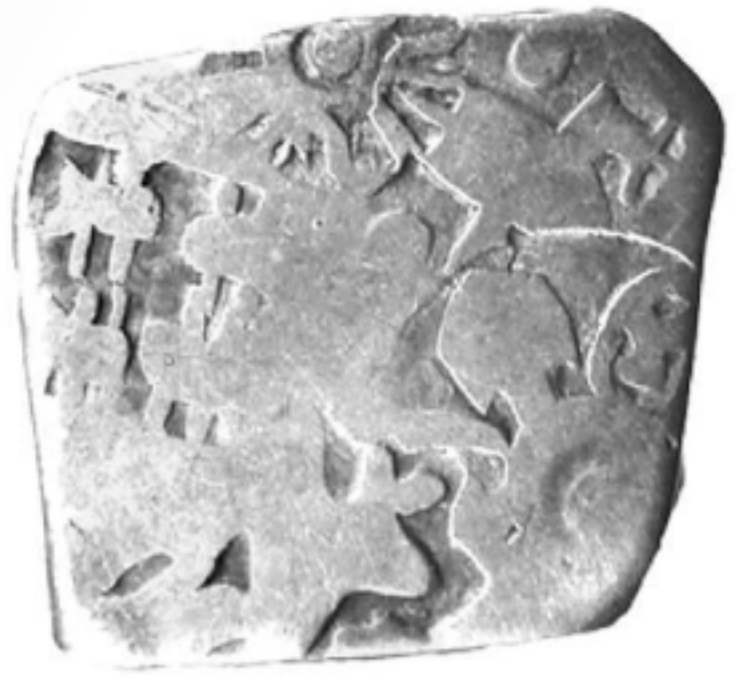
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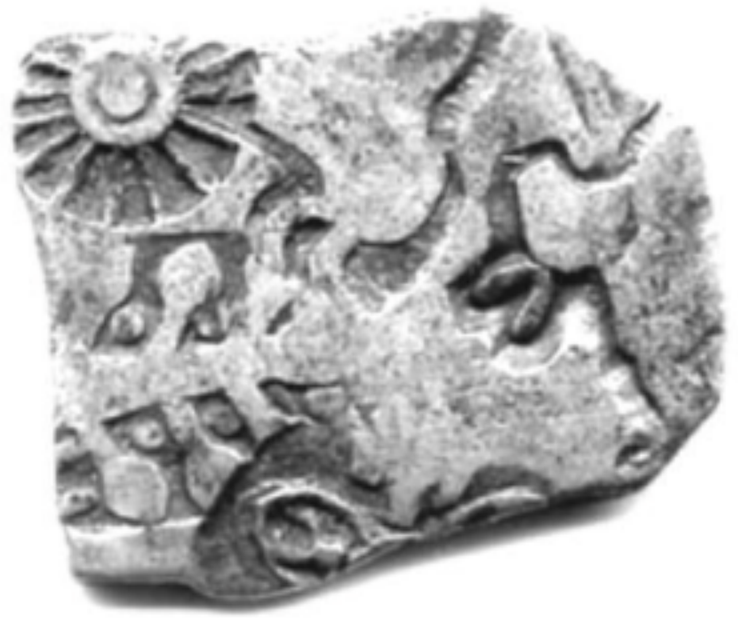
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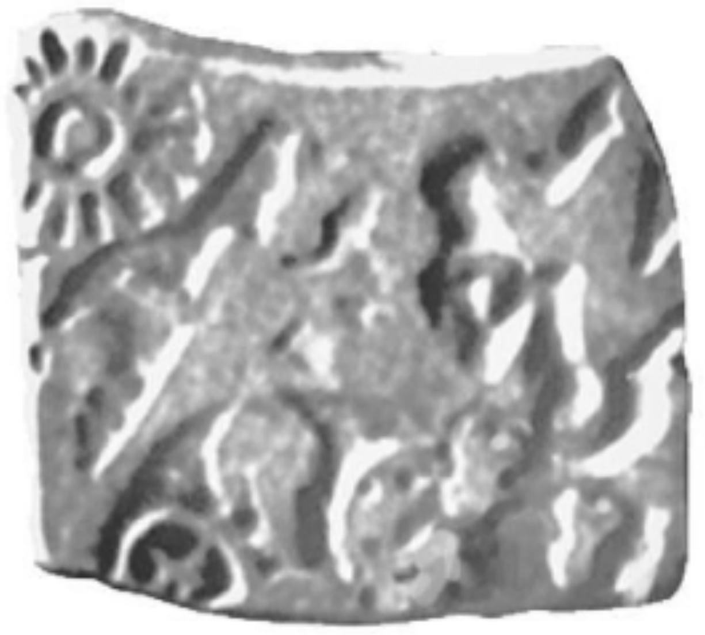
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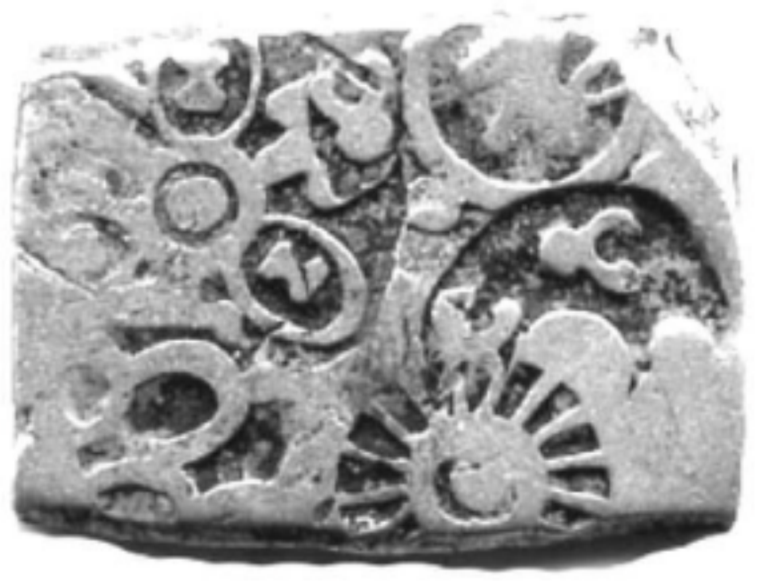
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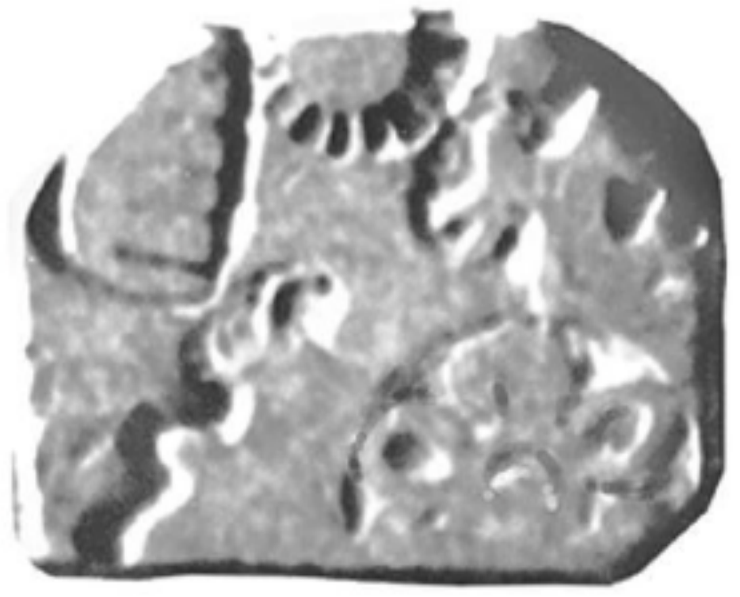
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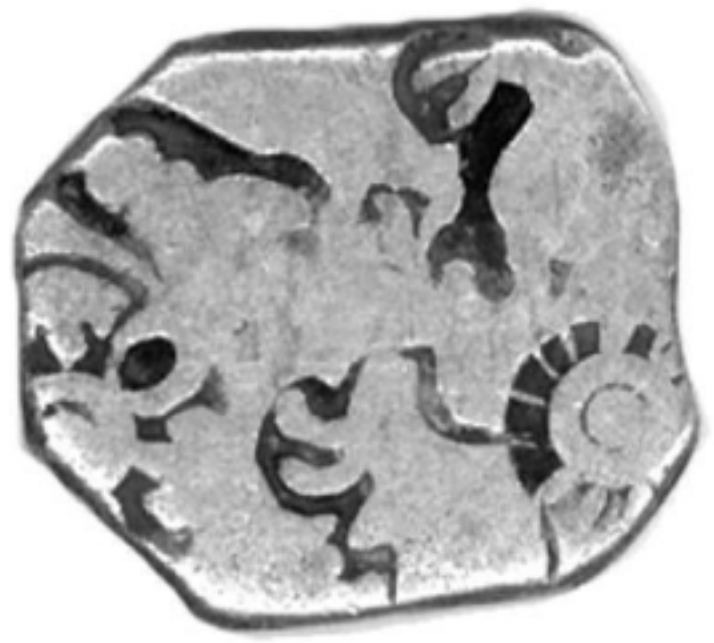
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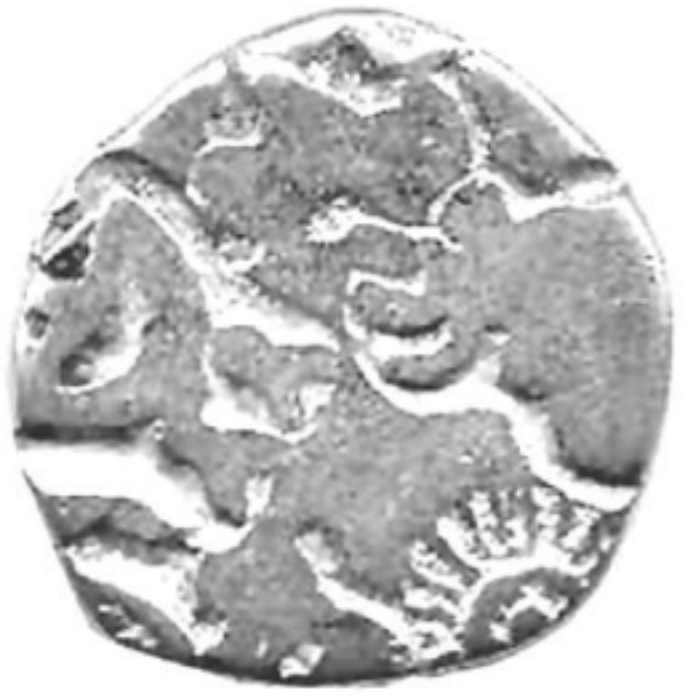
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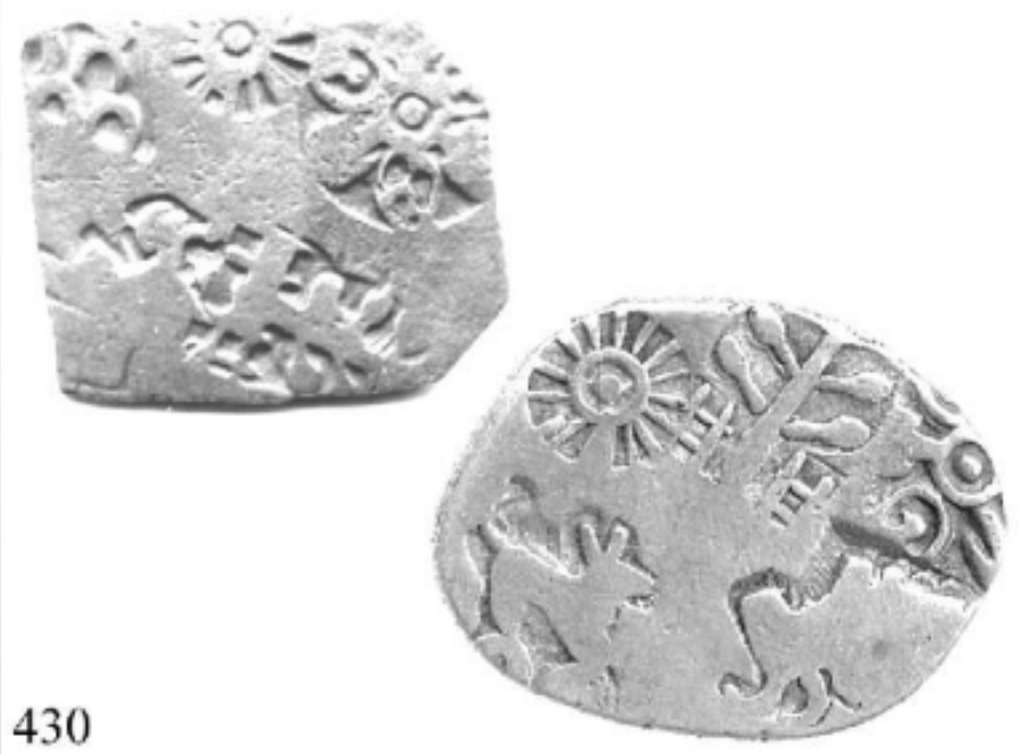
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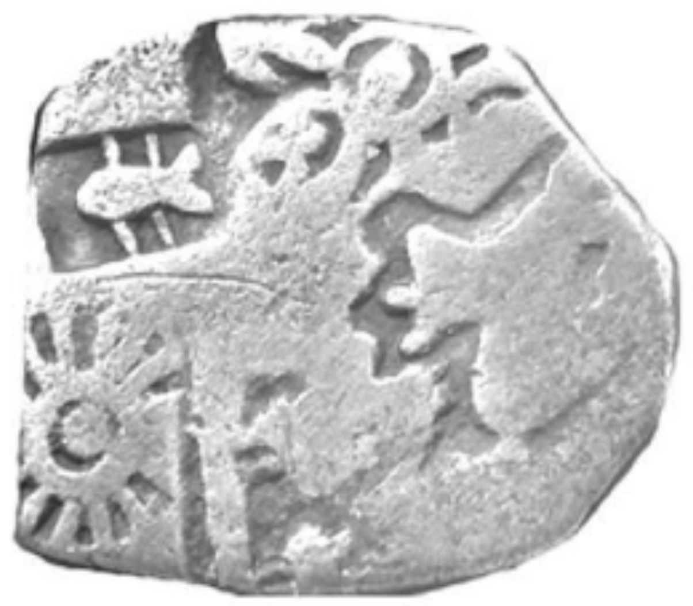
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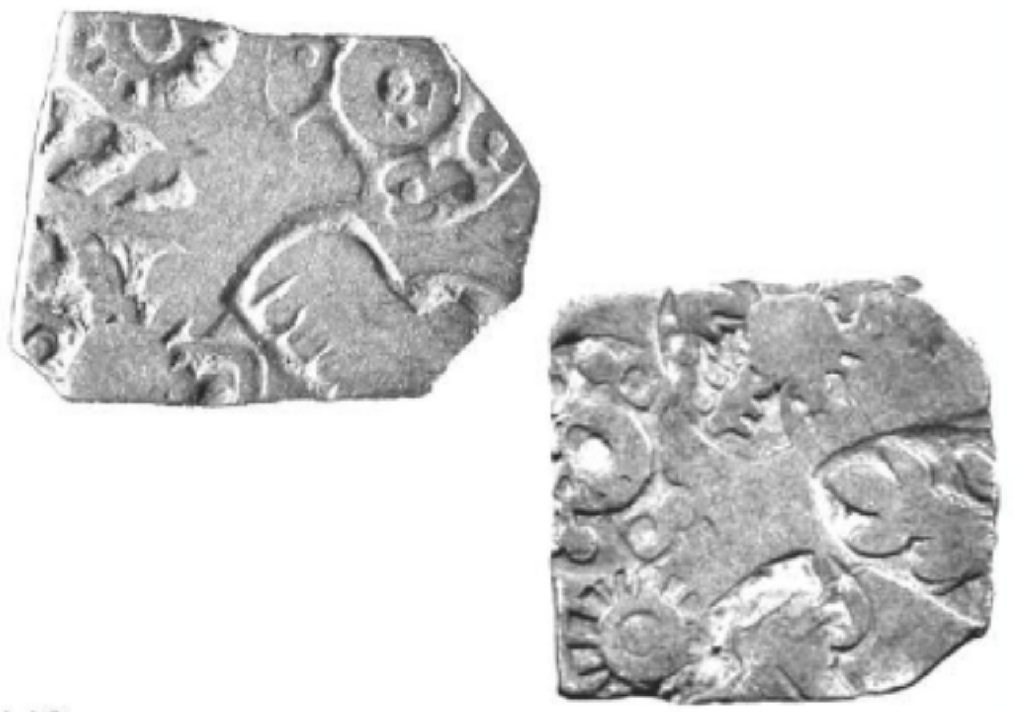
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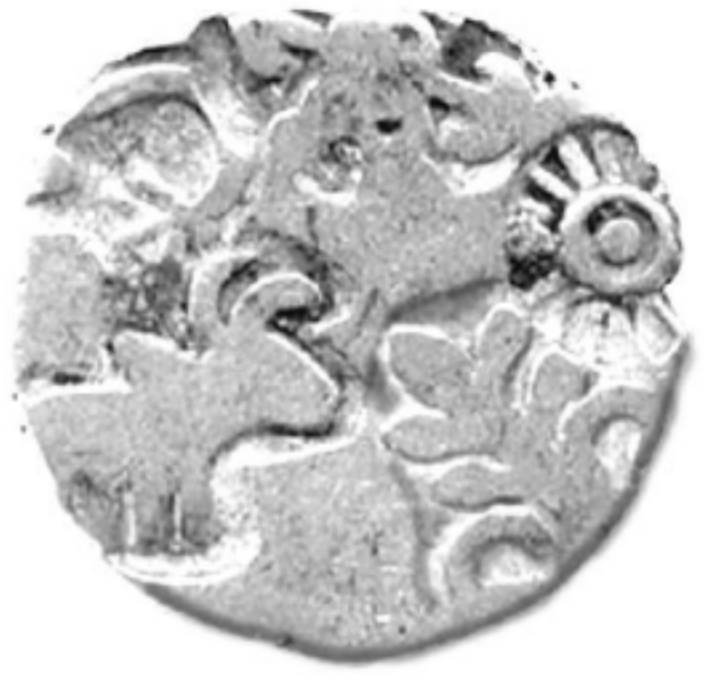
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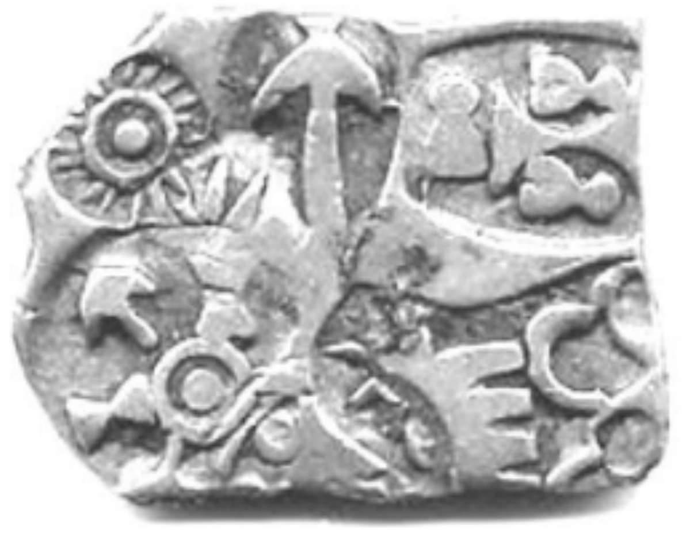
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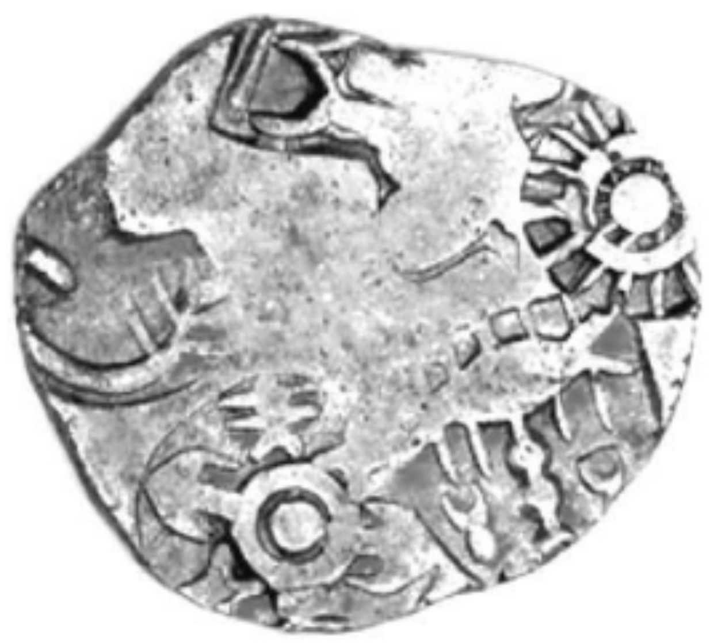
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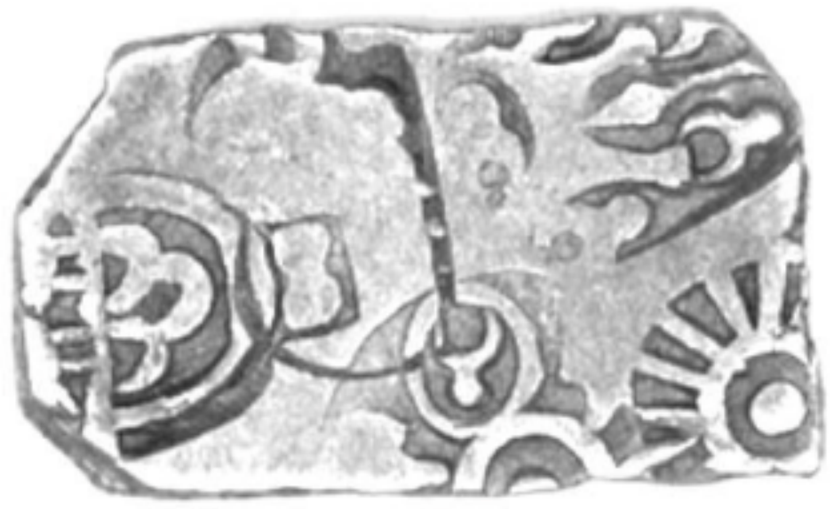
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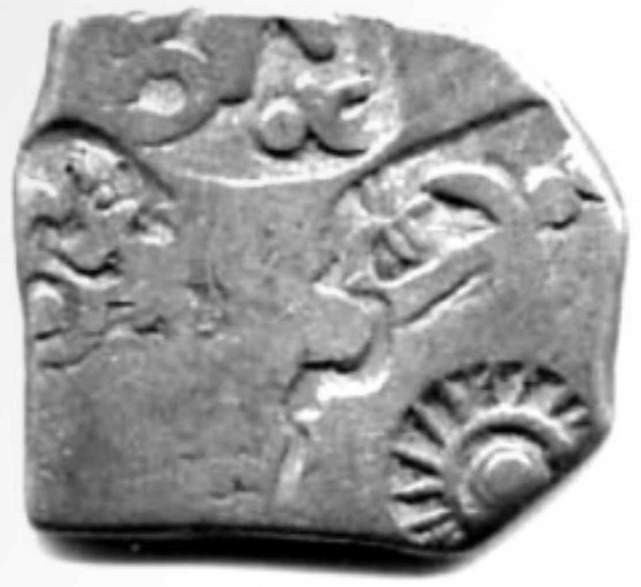
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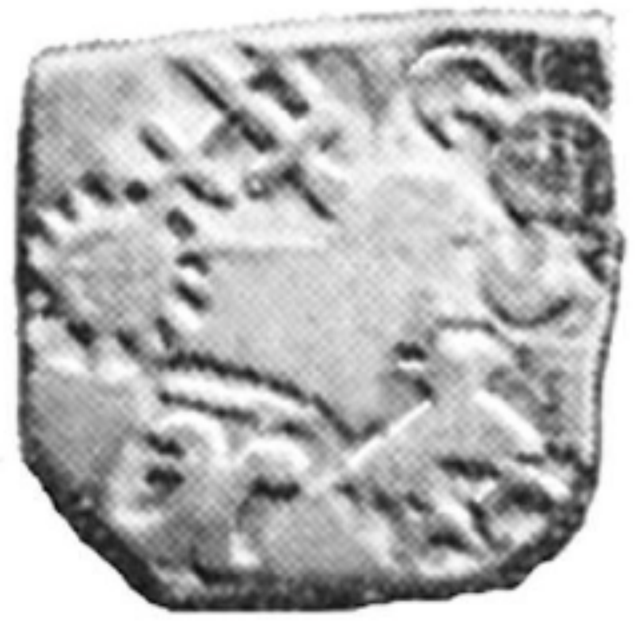
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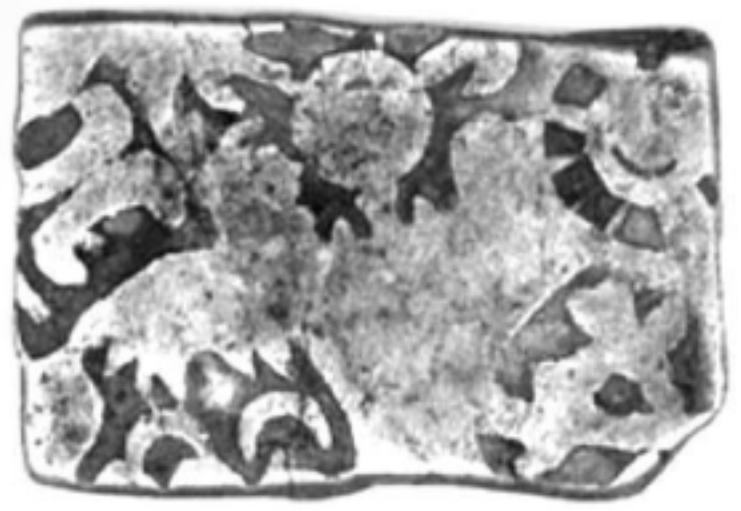
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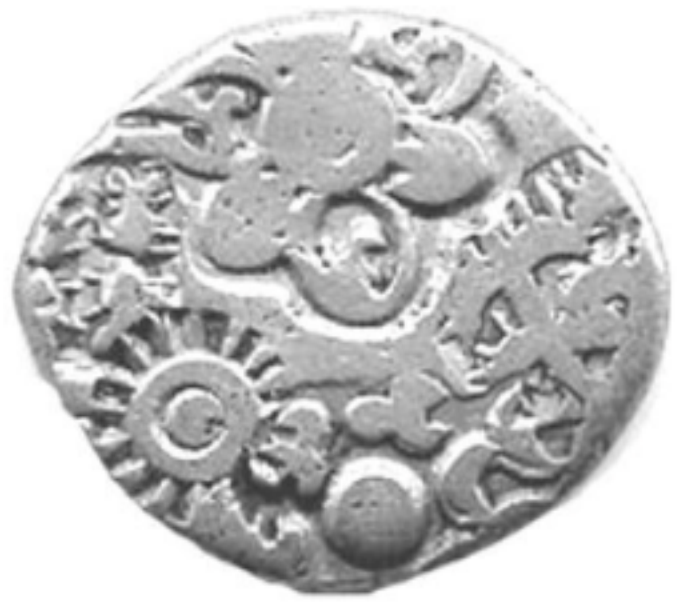
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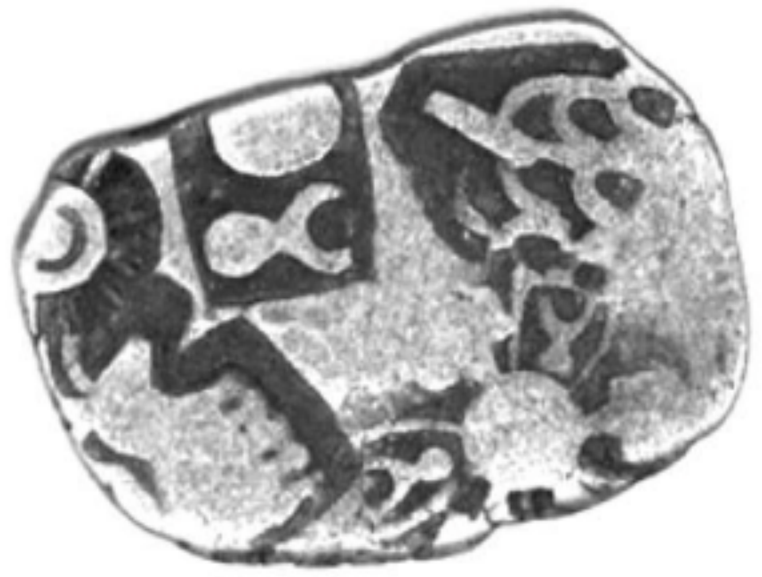
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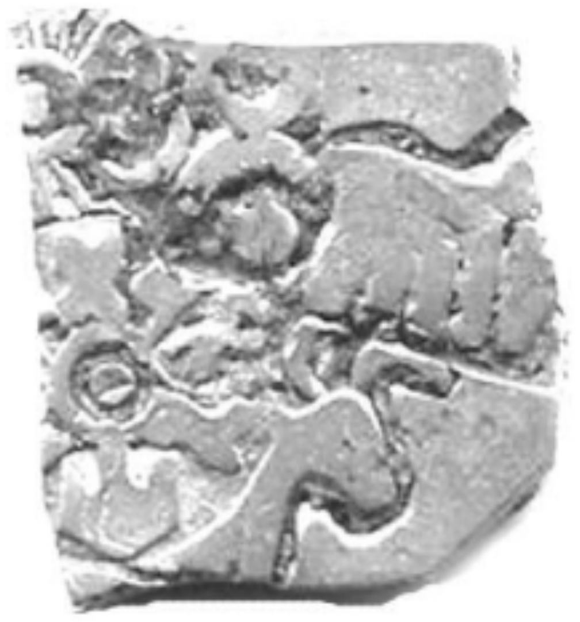
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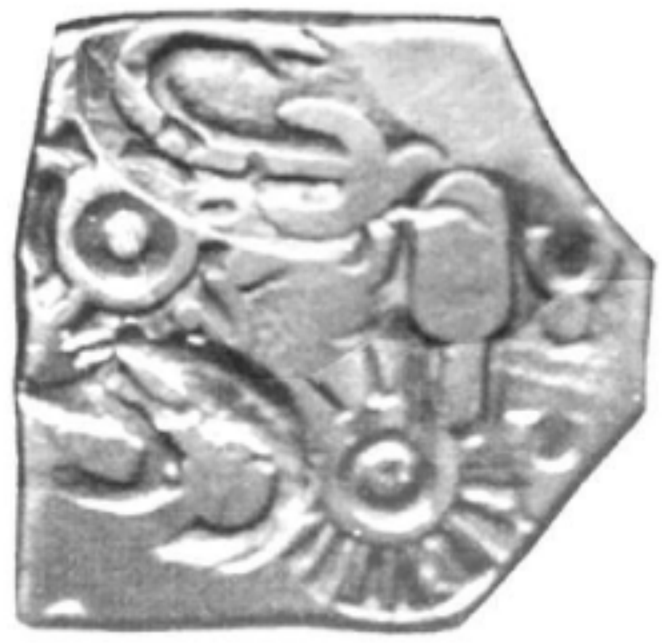
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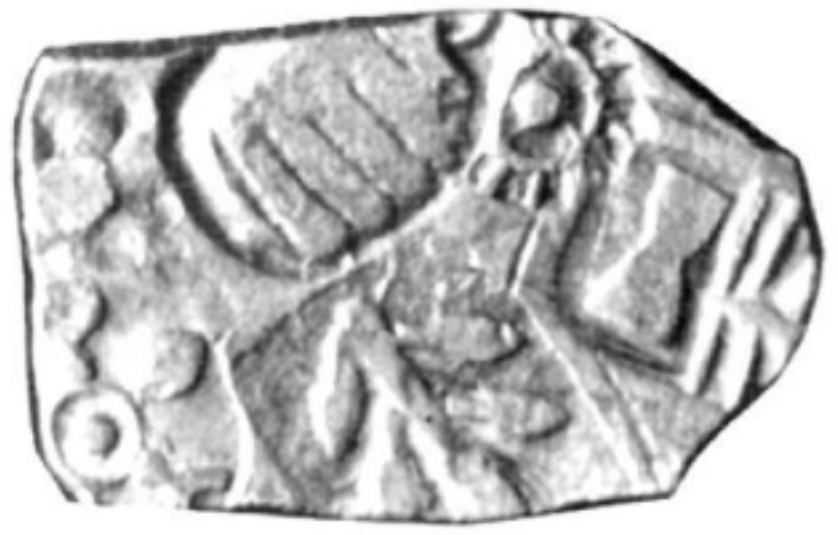
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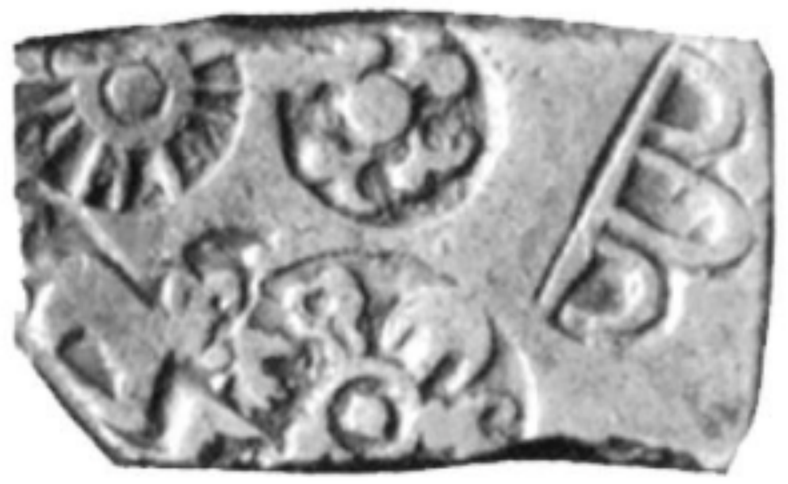
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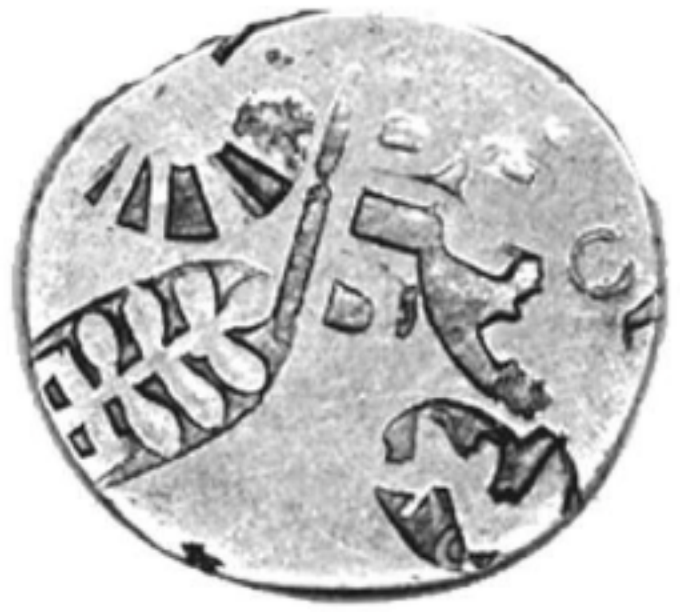
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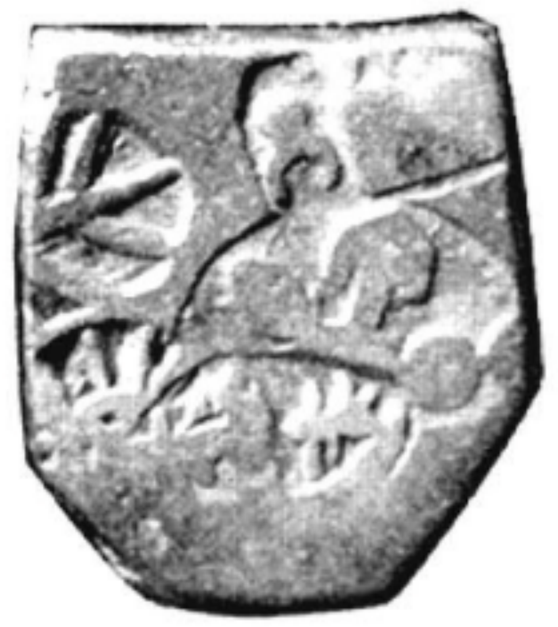
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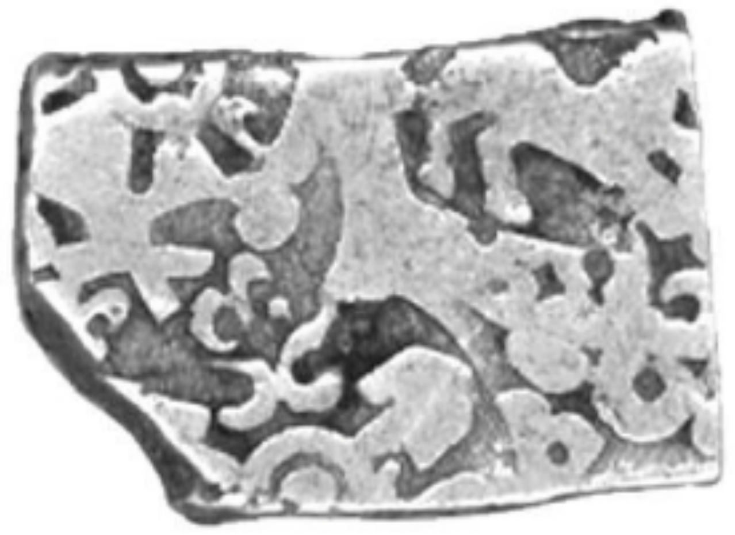
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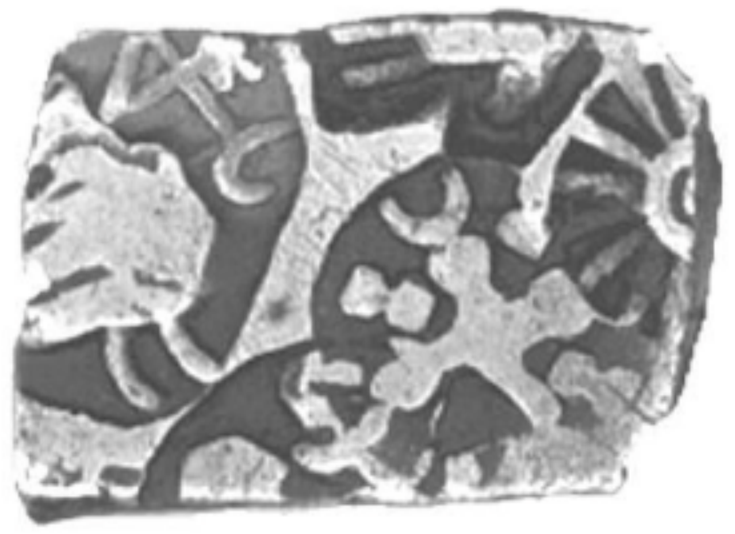
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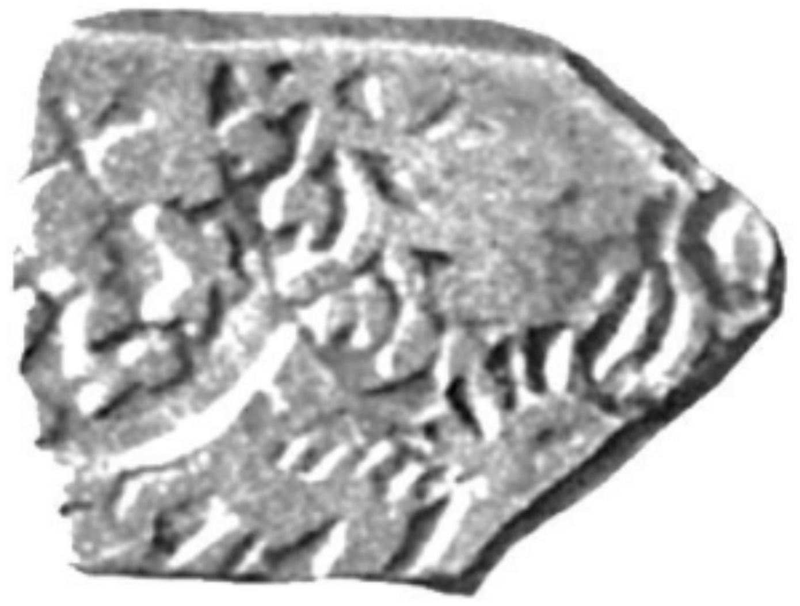
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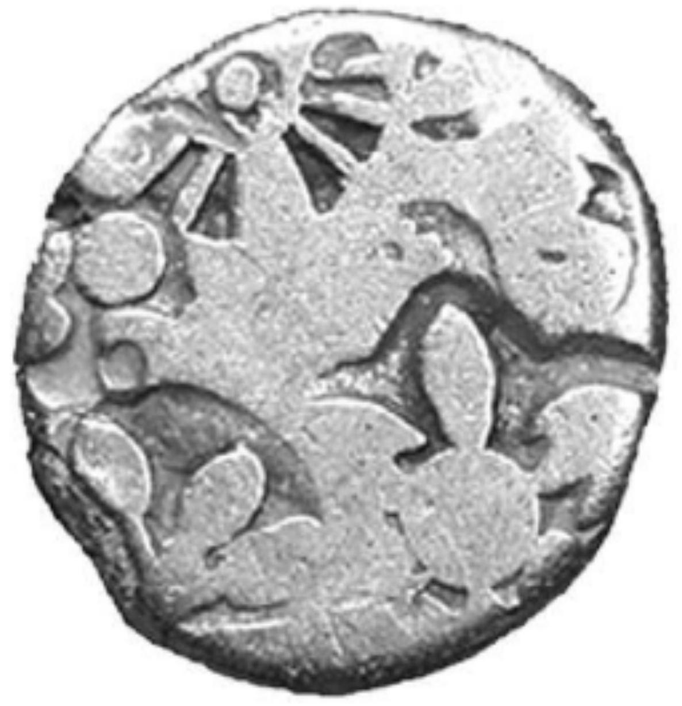
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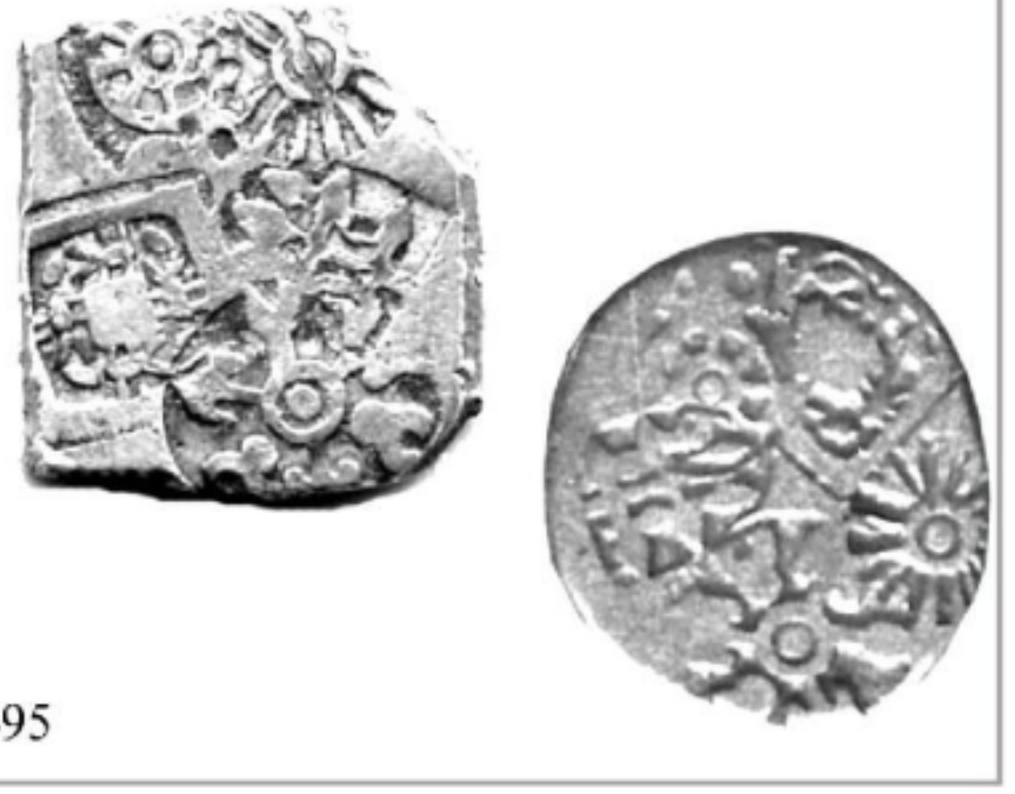
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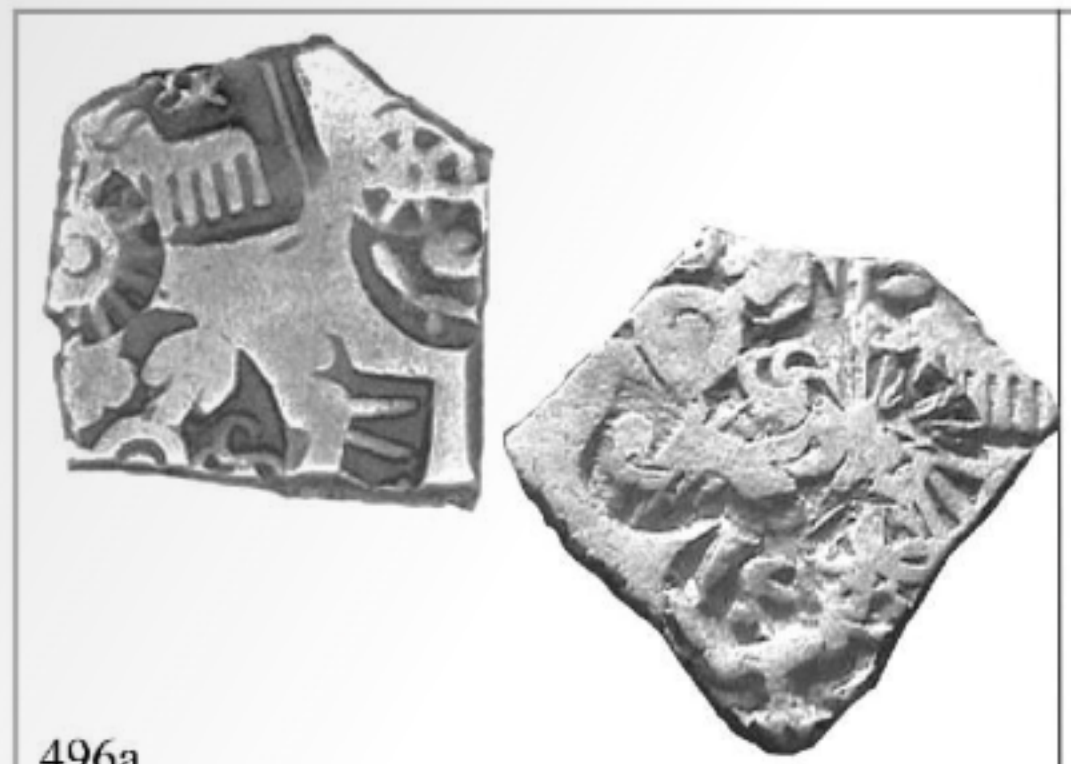

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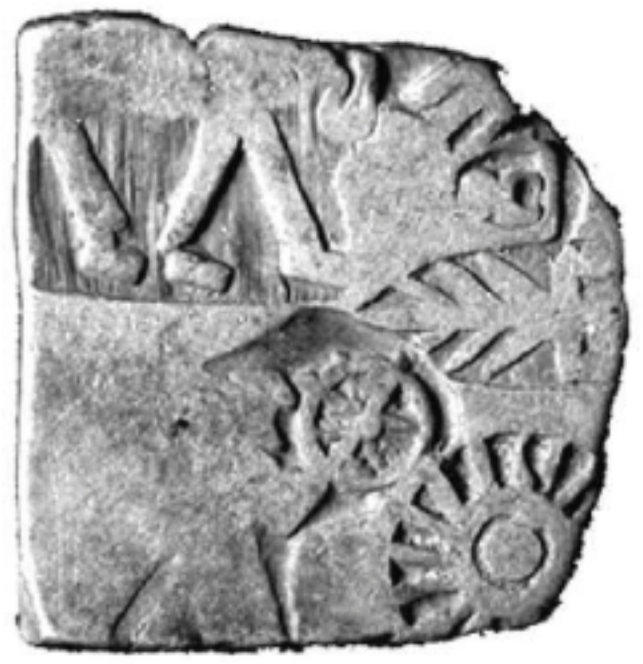

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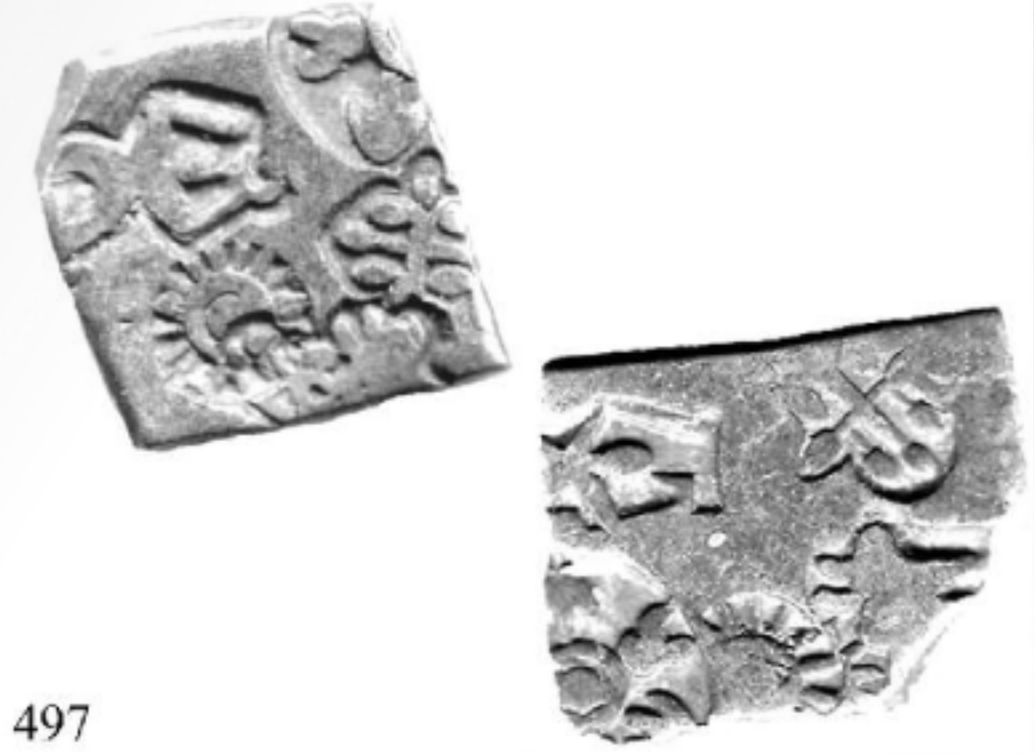

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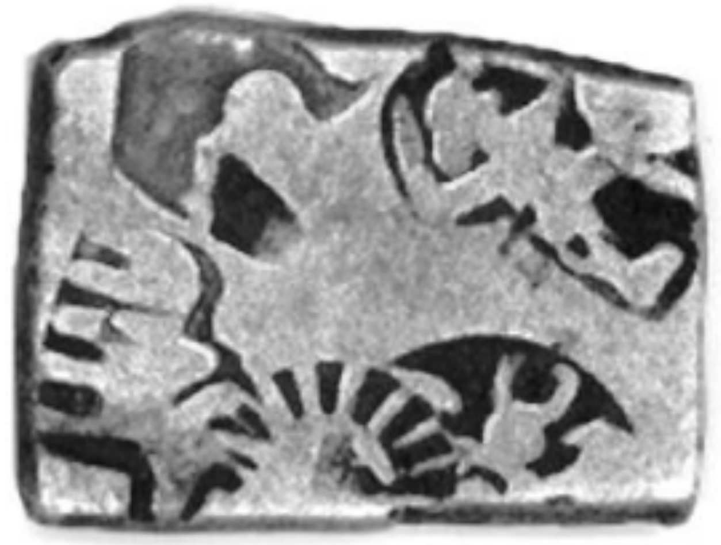

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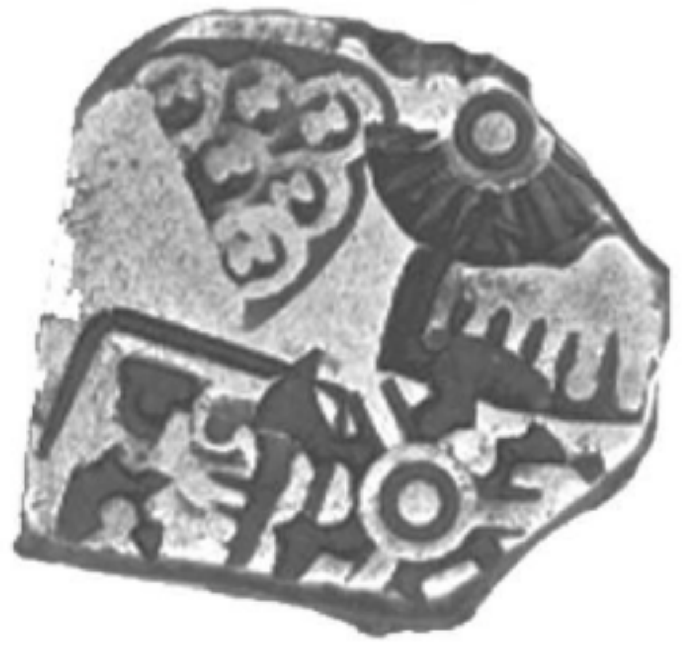

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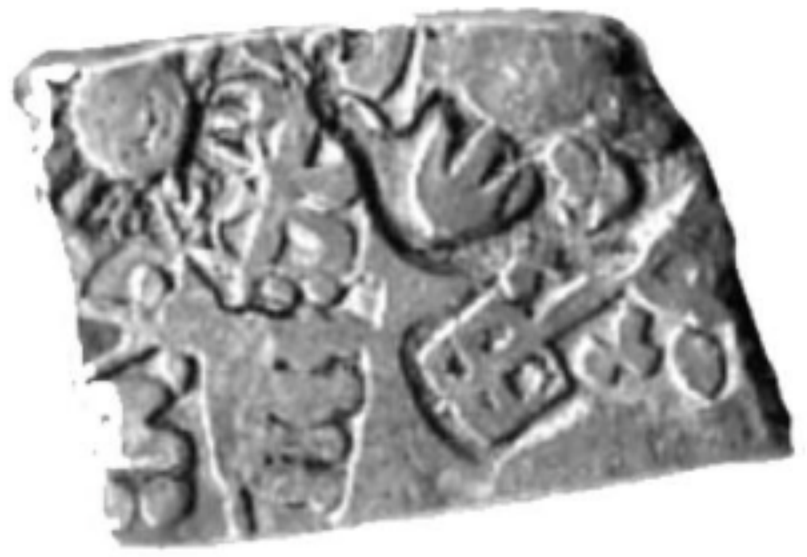

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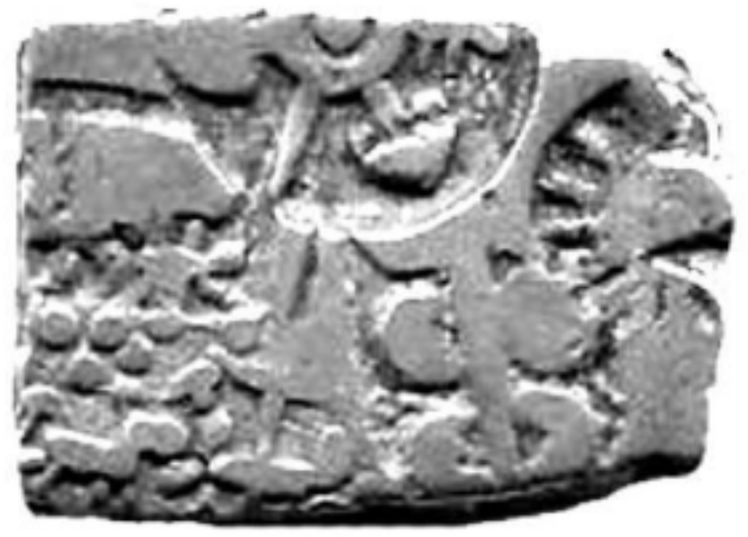

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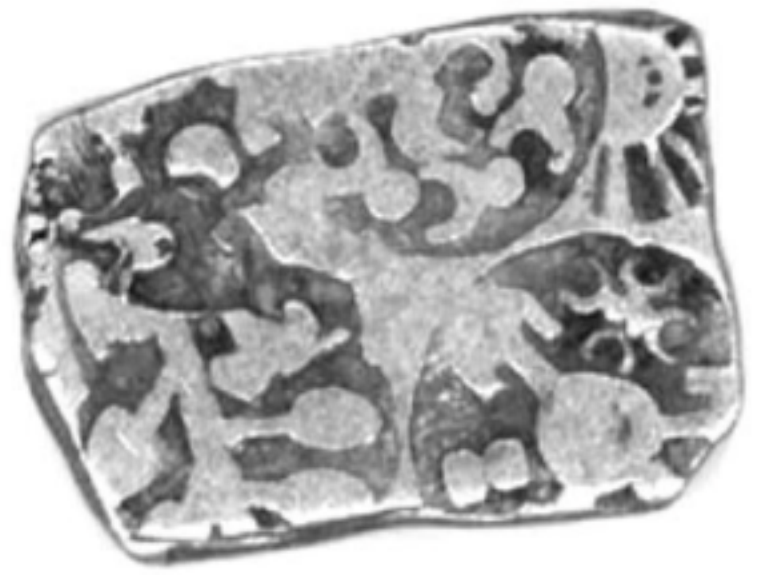

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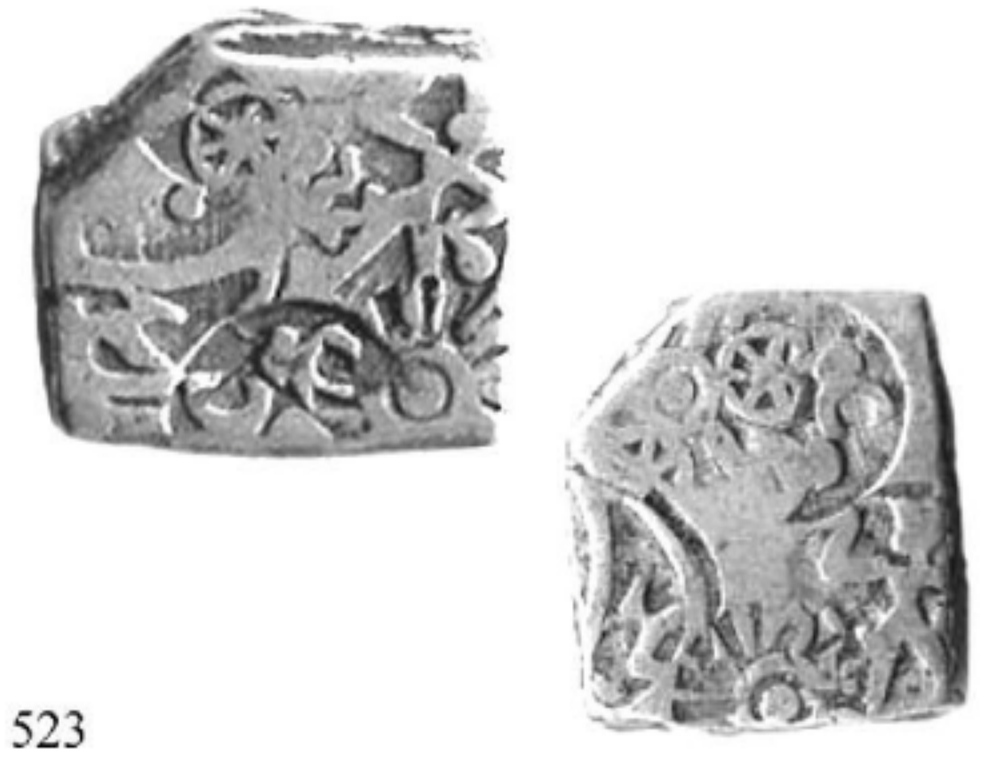

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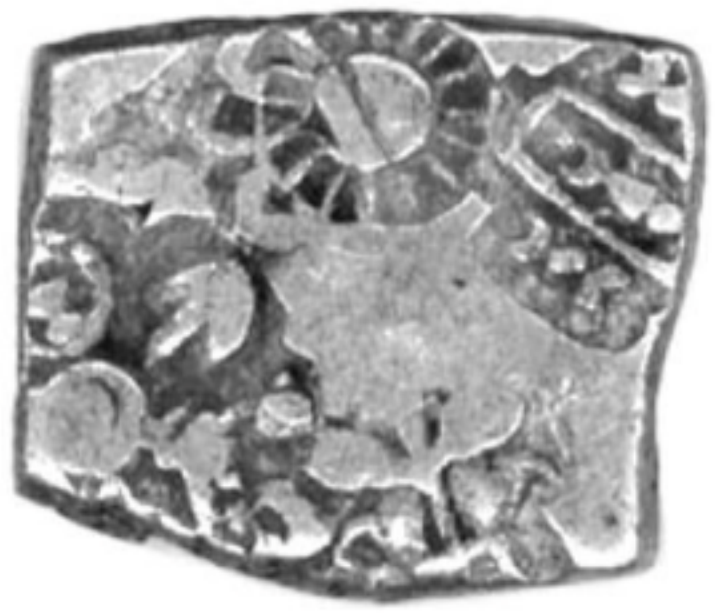

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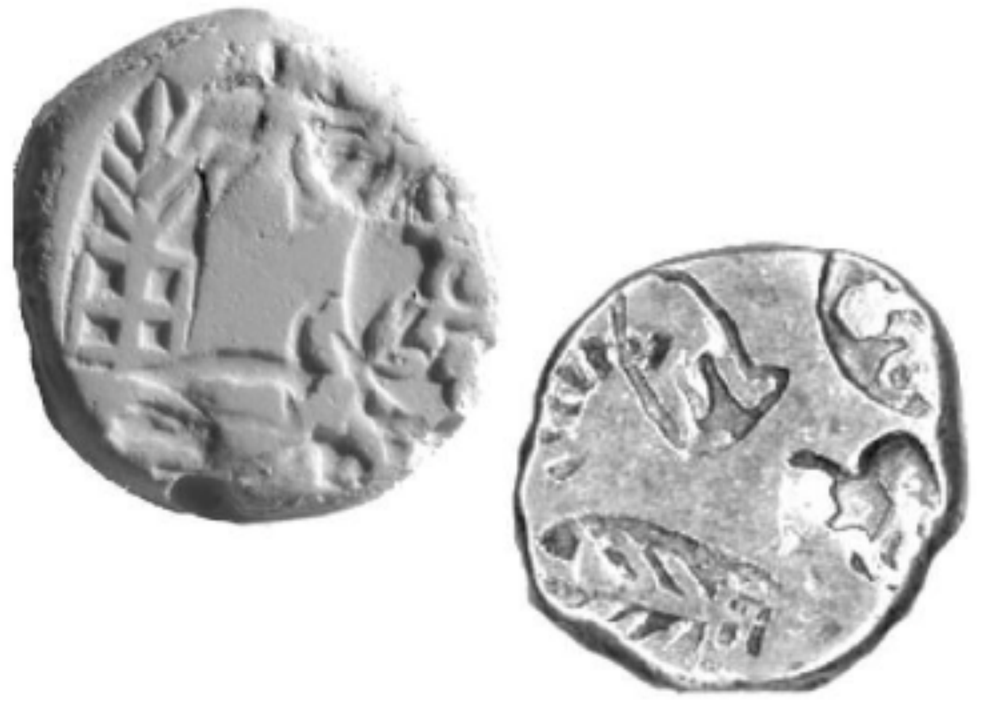

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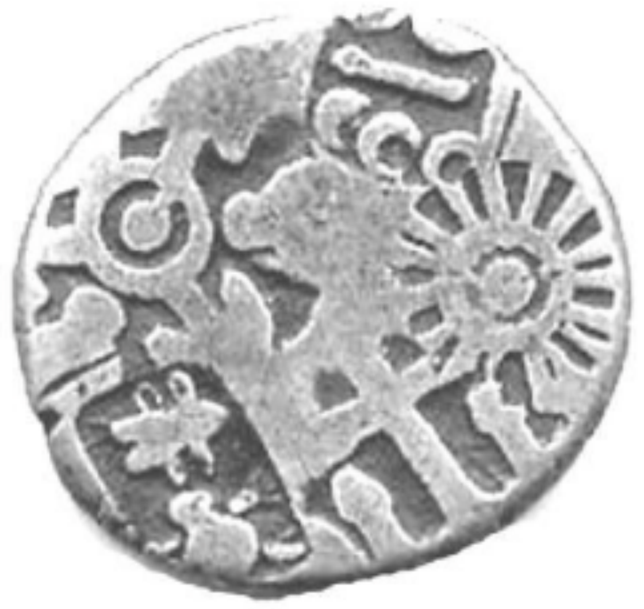

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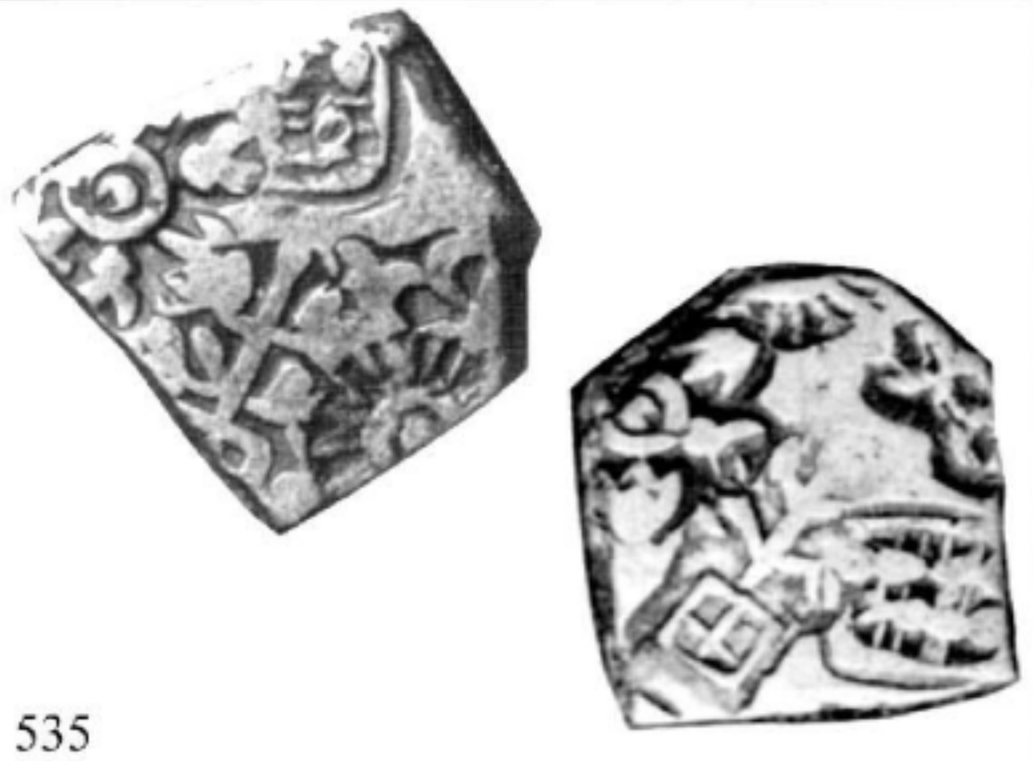

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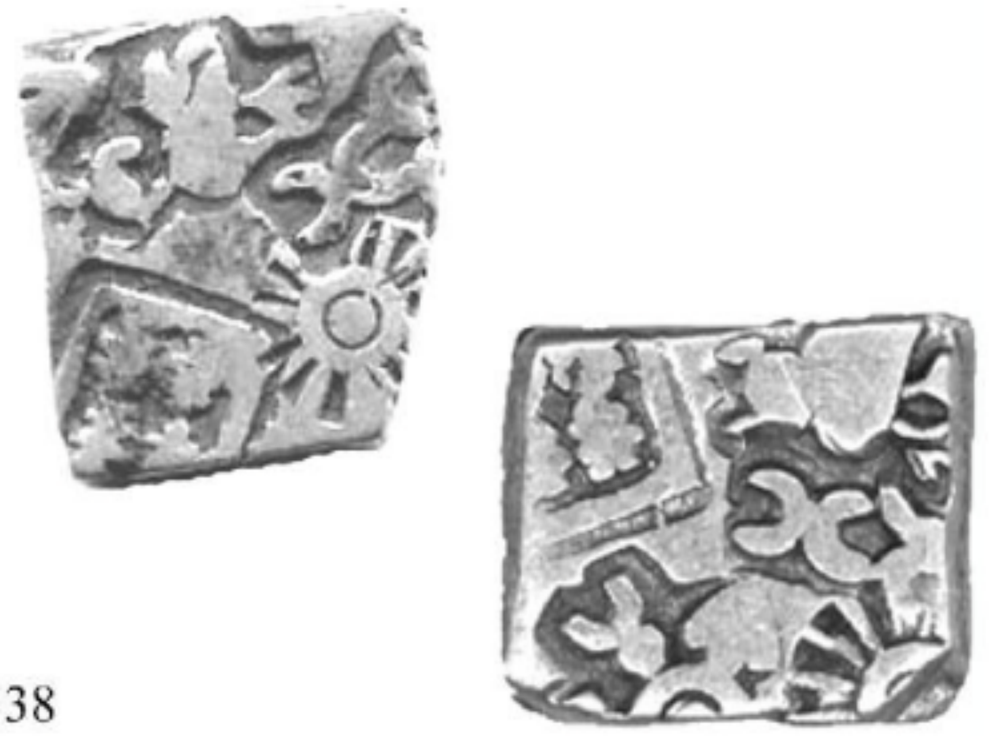

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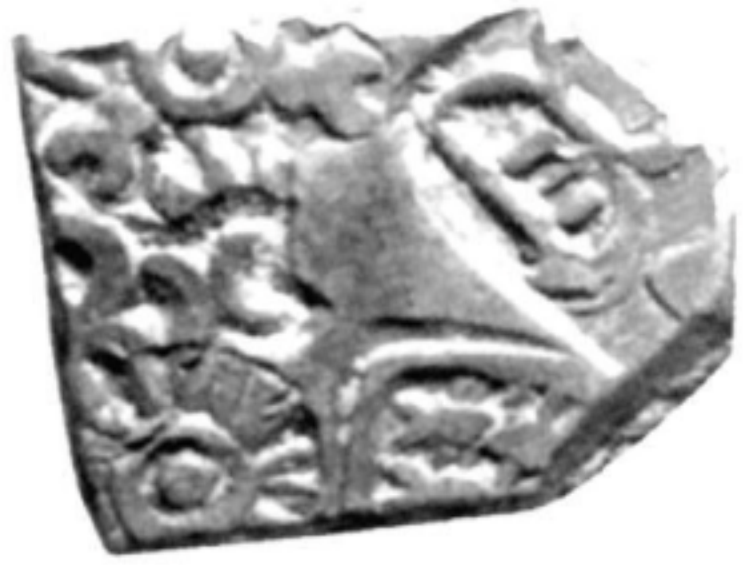

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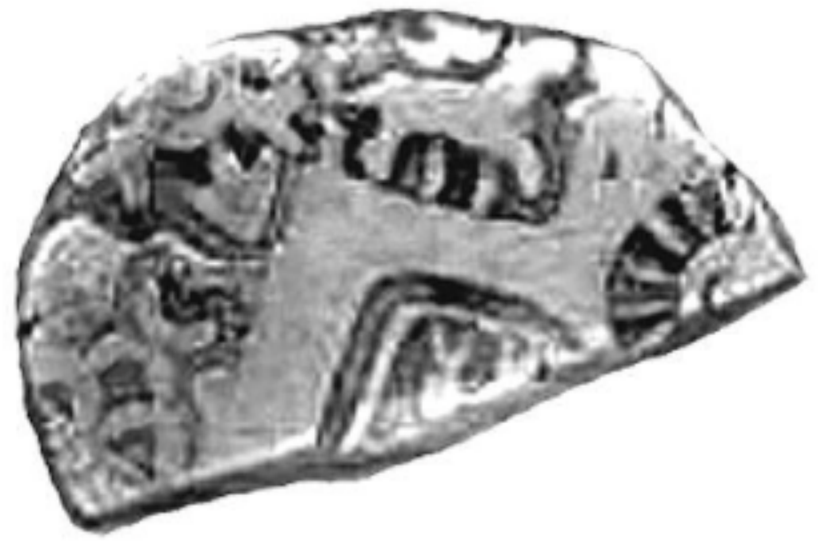

539b

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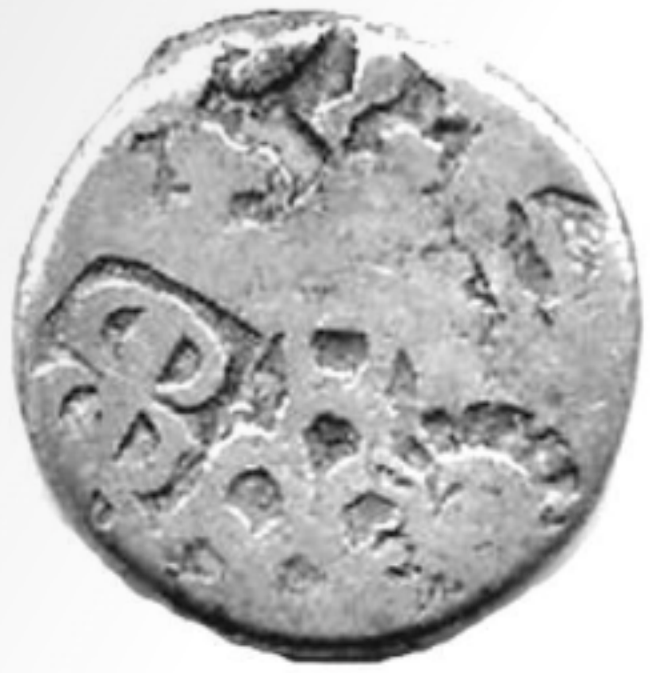
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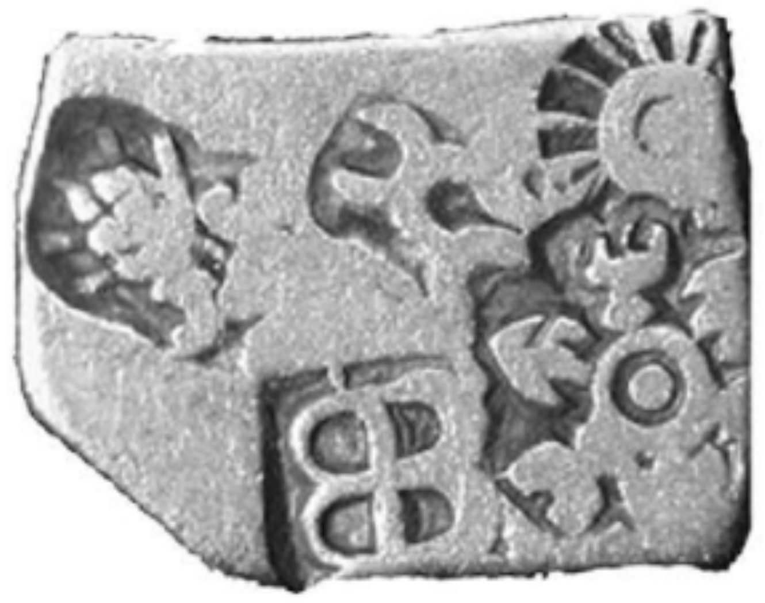
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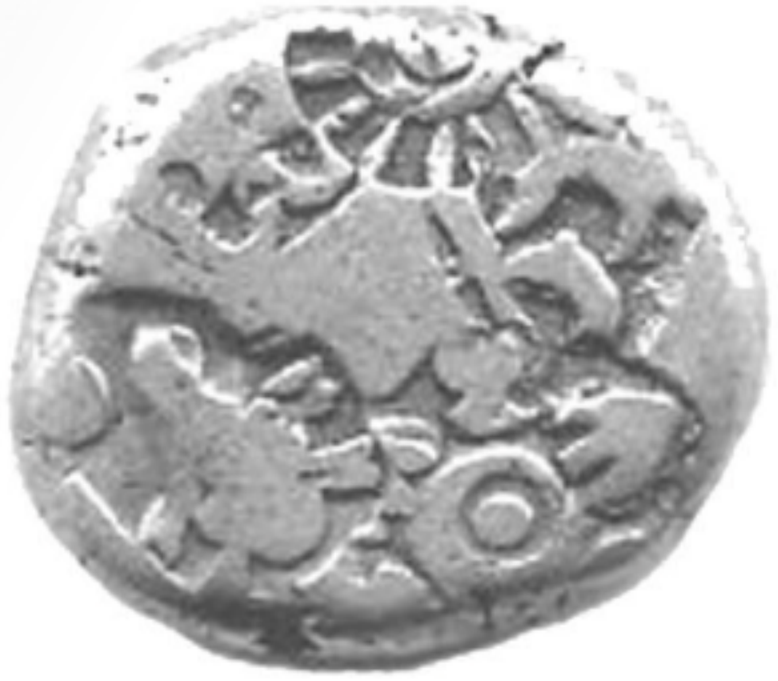
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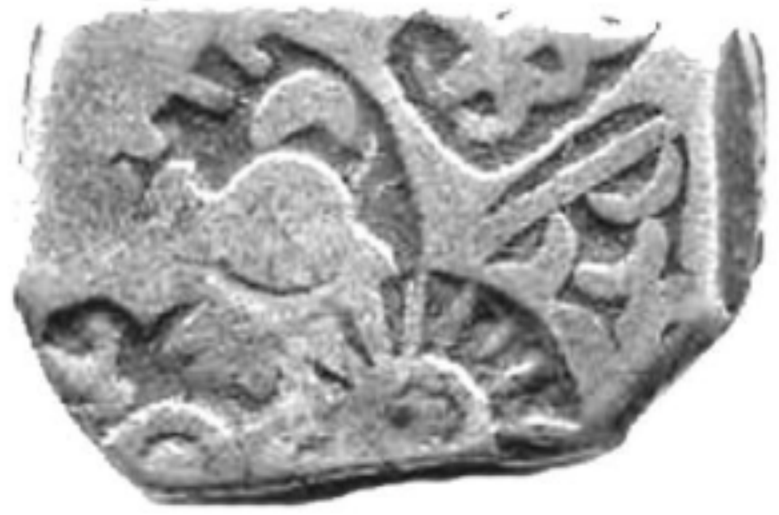
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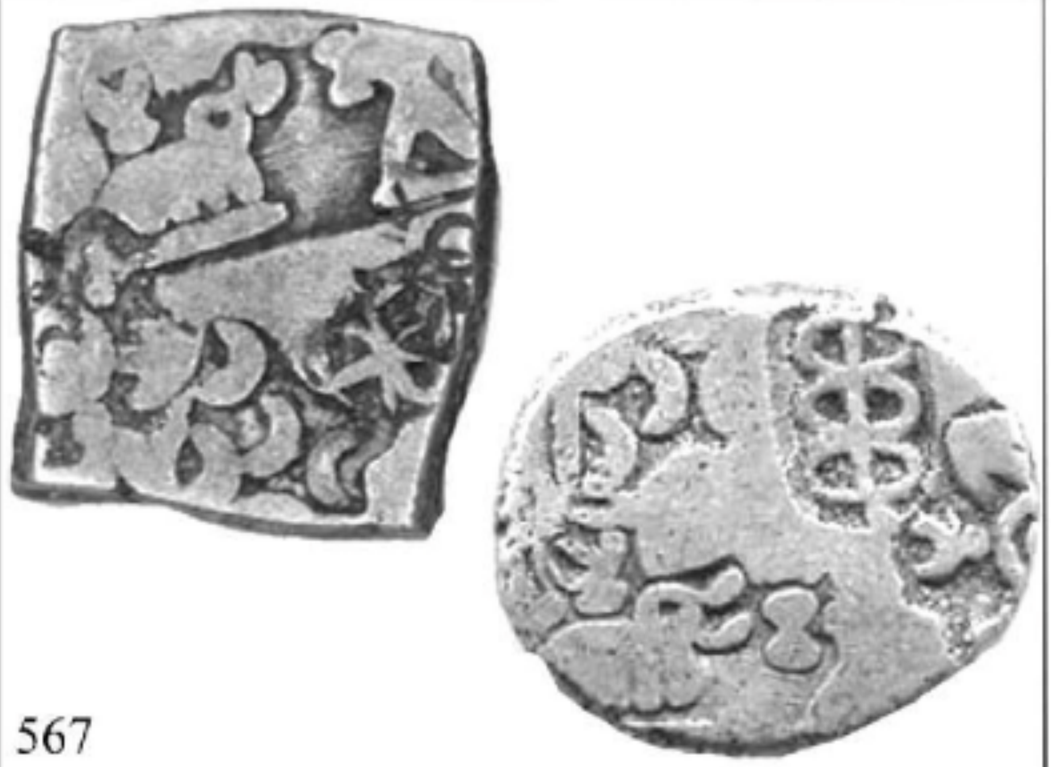
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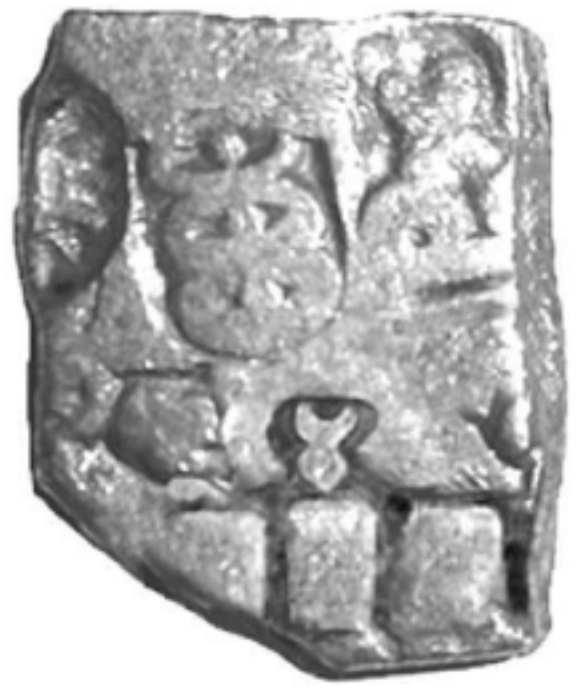
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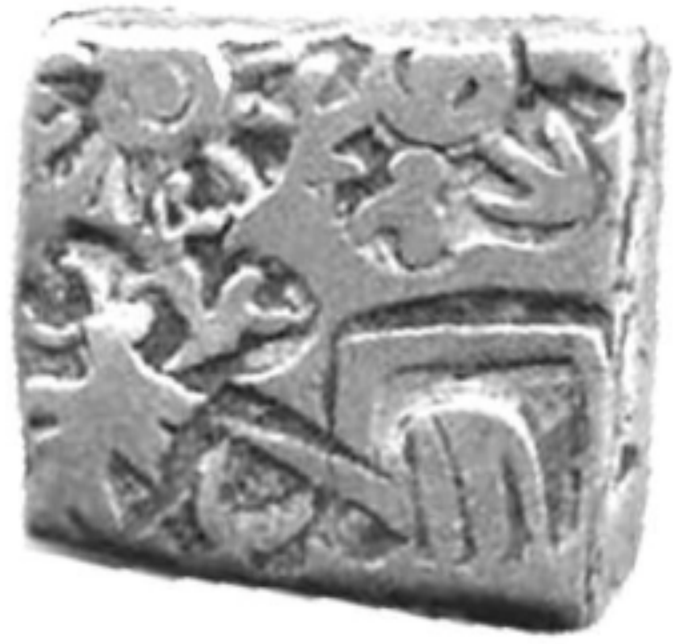
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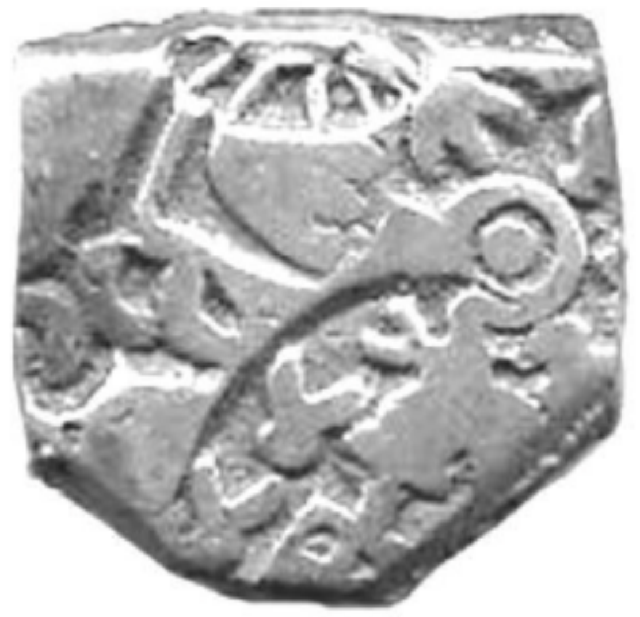
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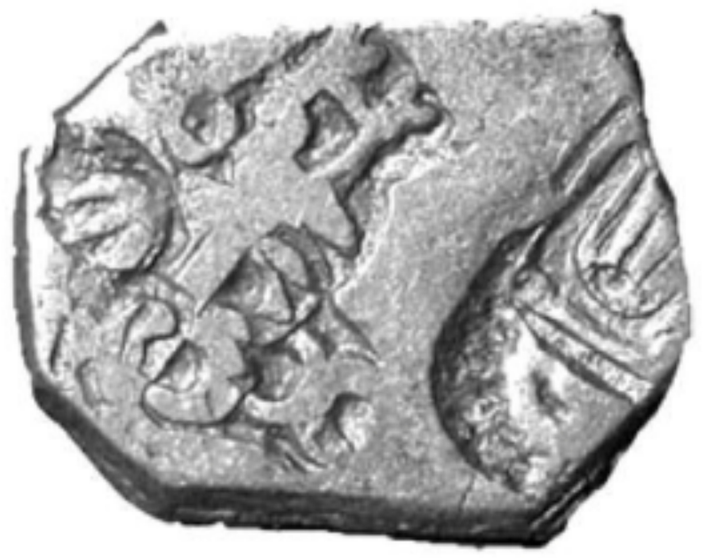
## ENLARGEMENTS SERIES VI - VII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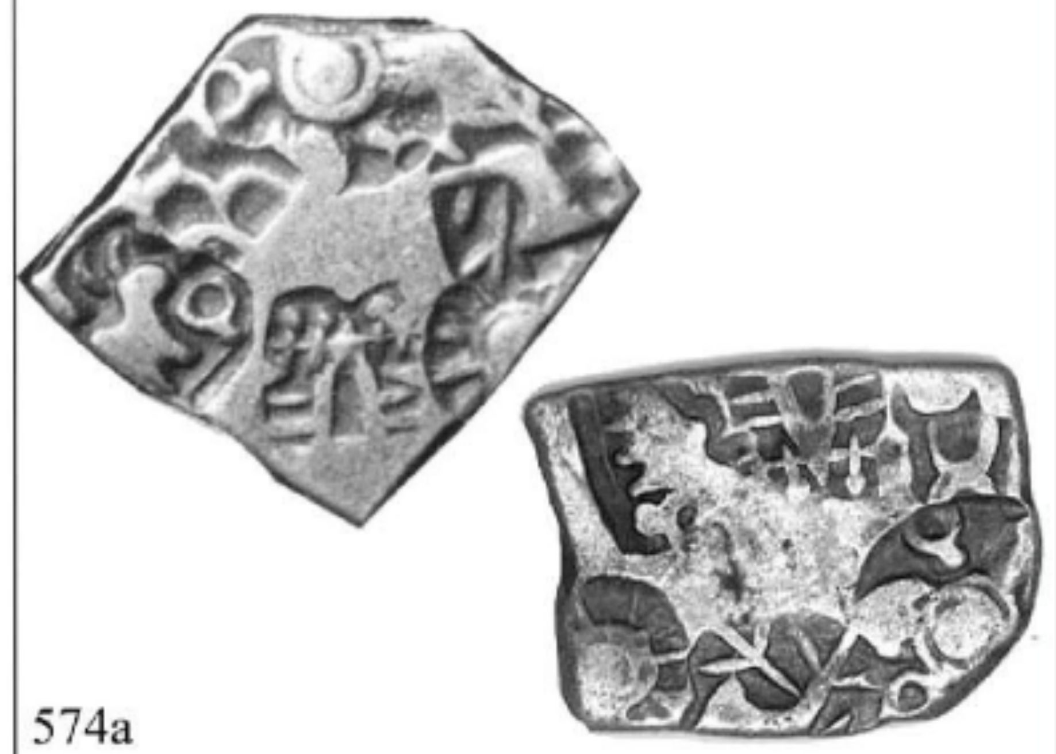
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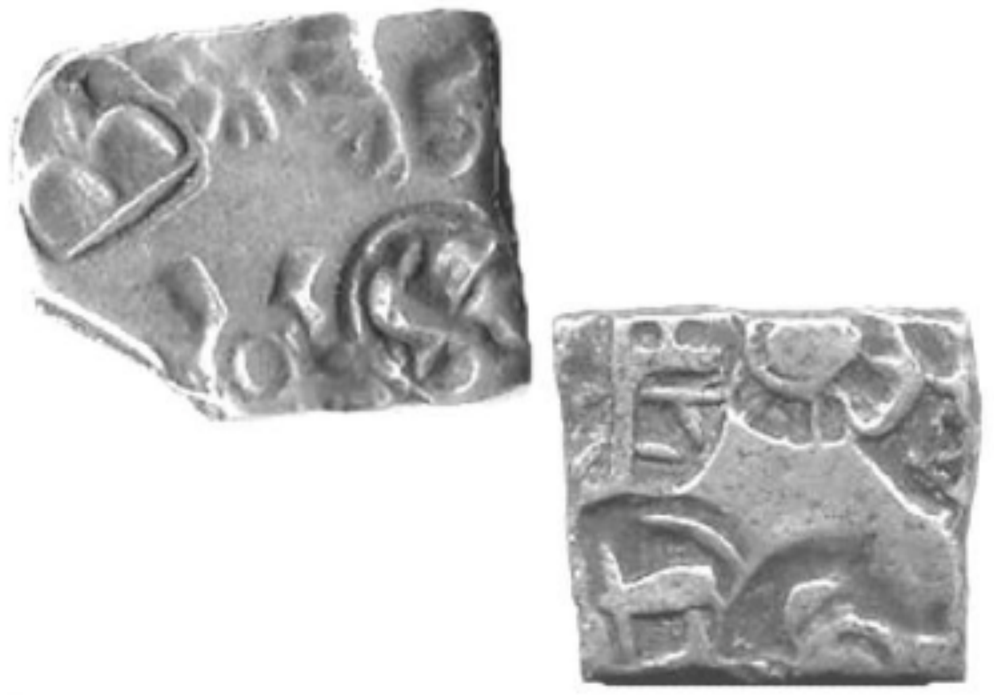
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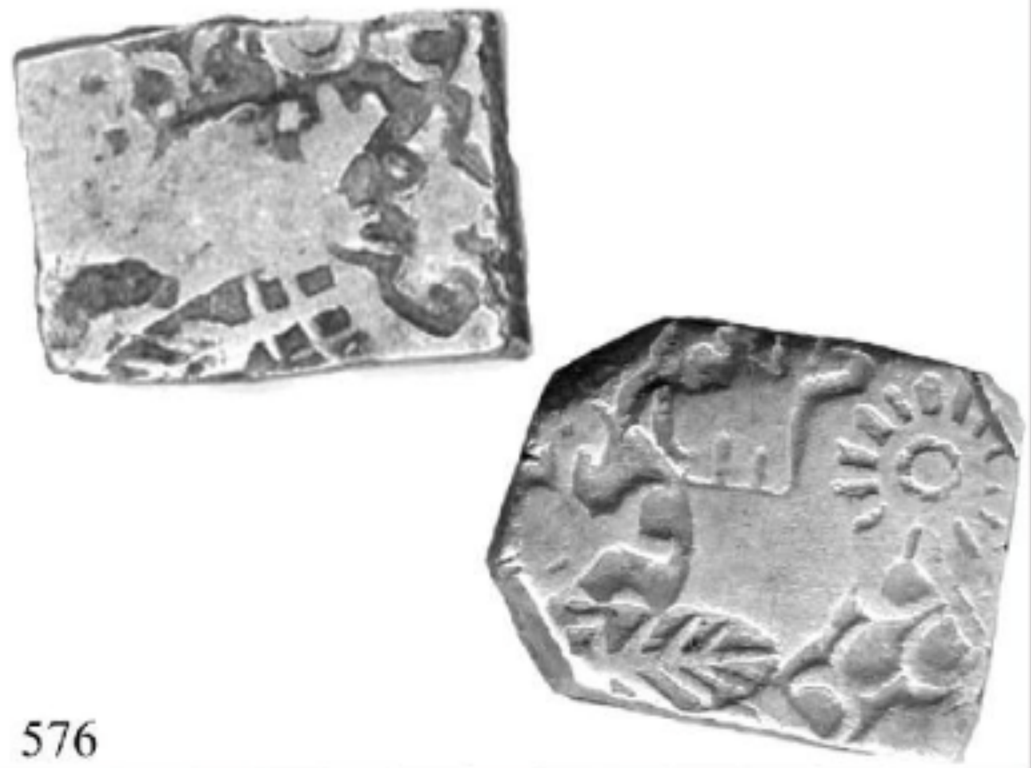
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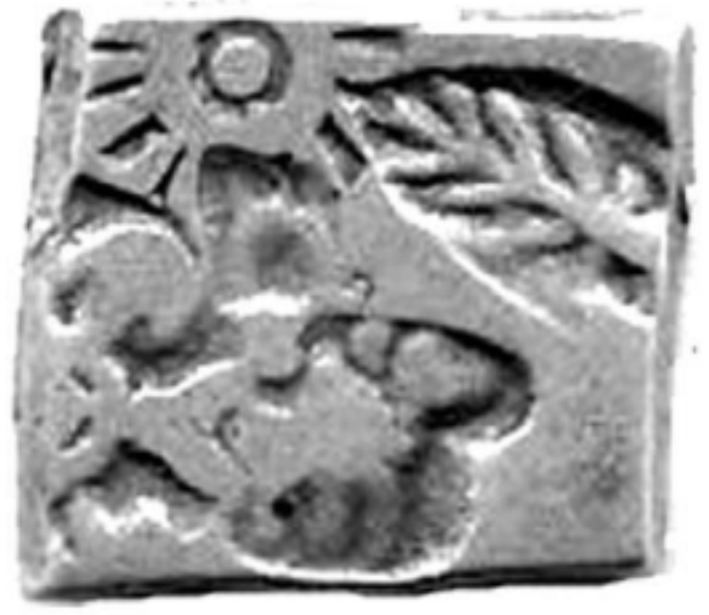
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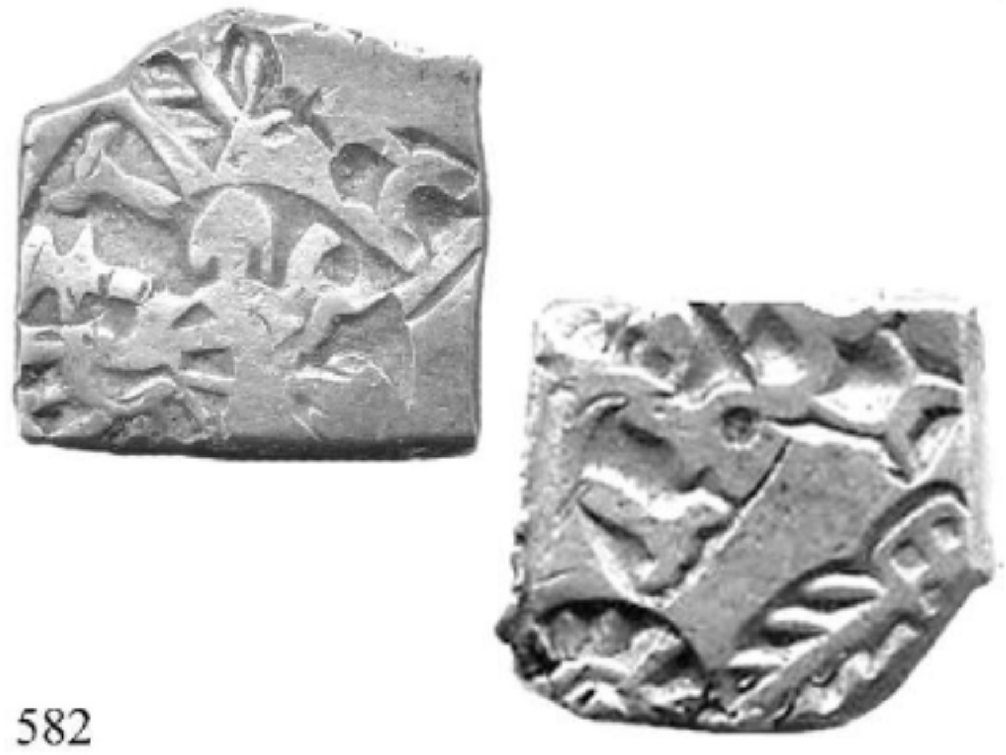
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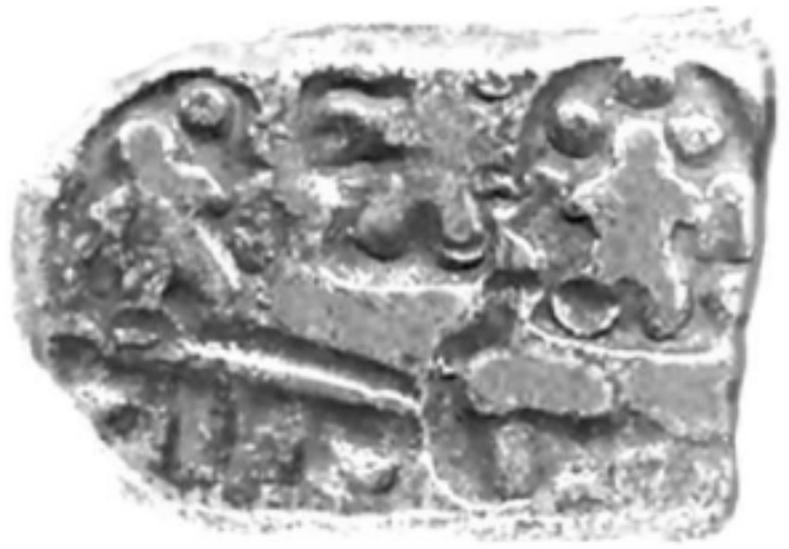
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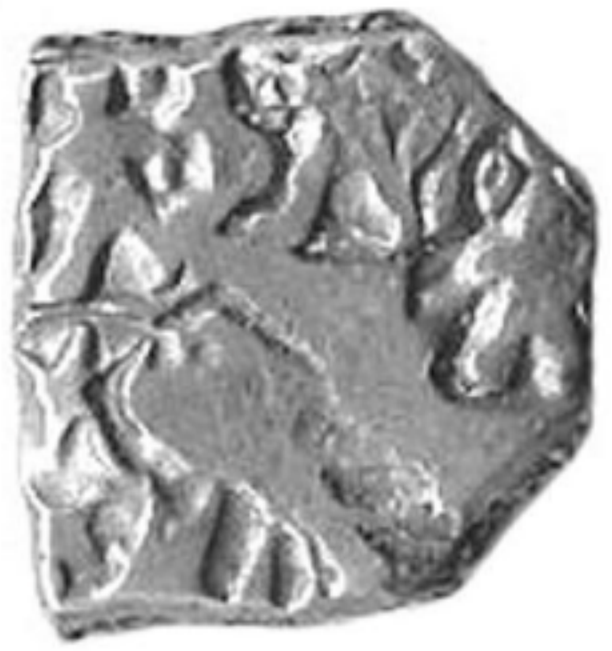
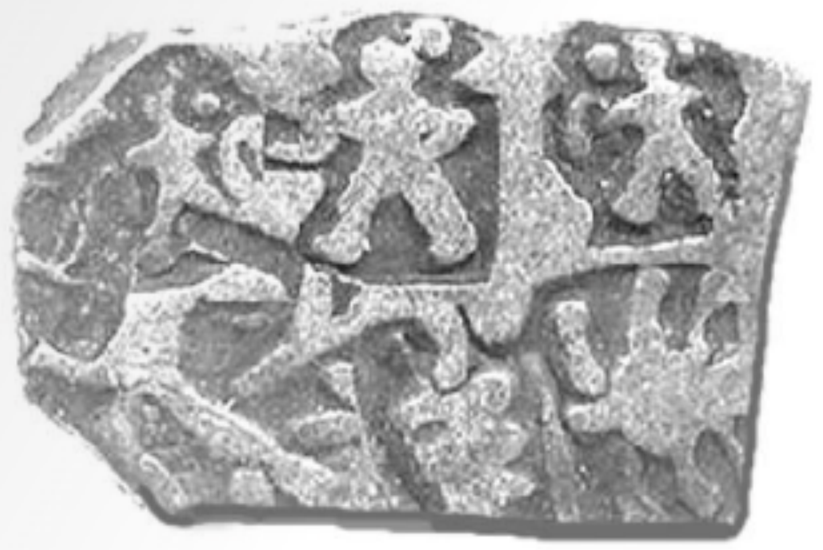

585

## ENLARGEMENTS SERIES VII-VIII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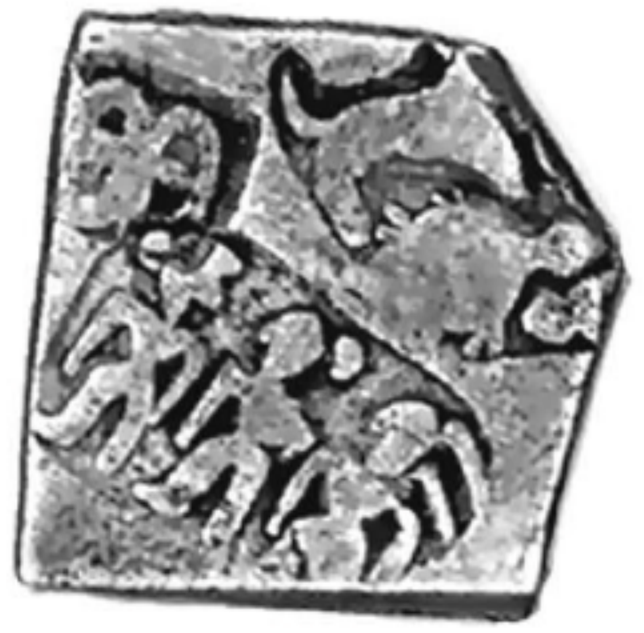
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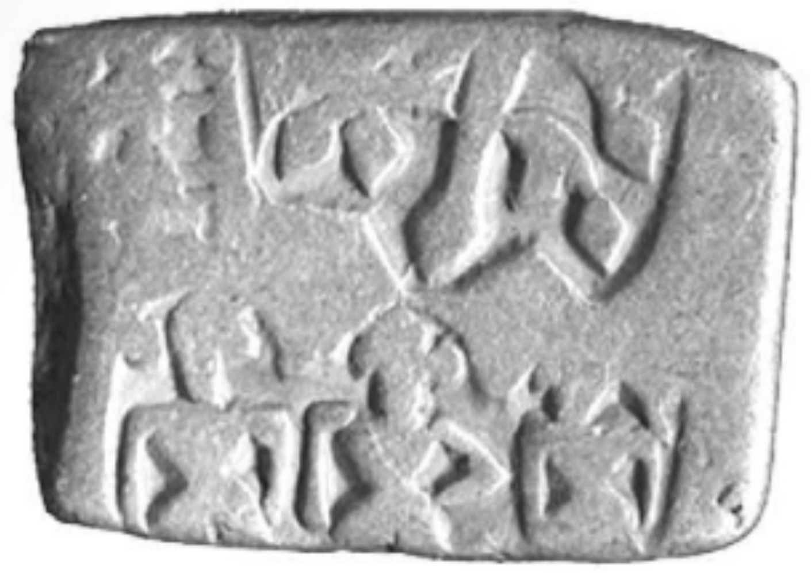
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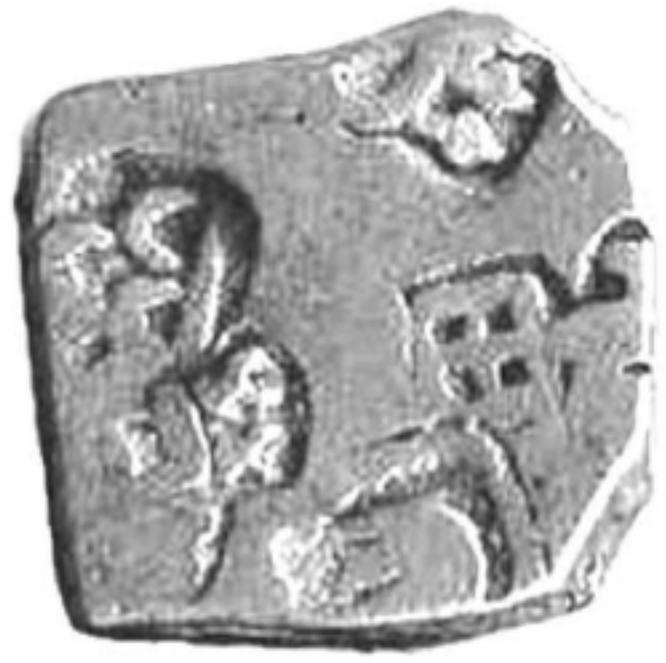
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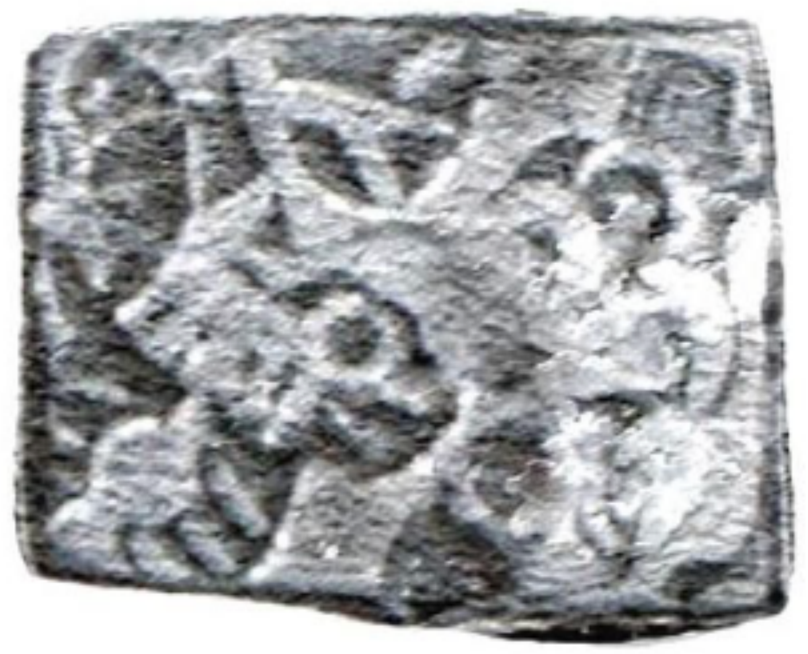
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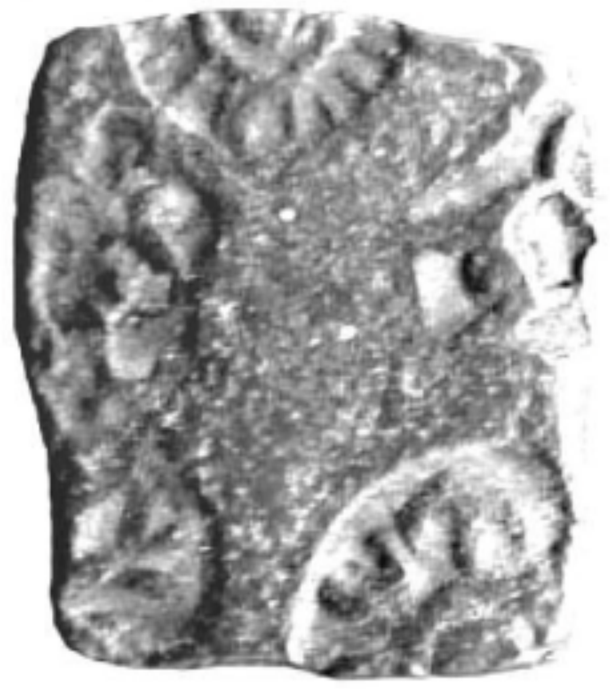
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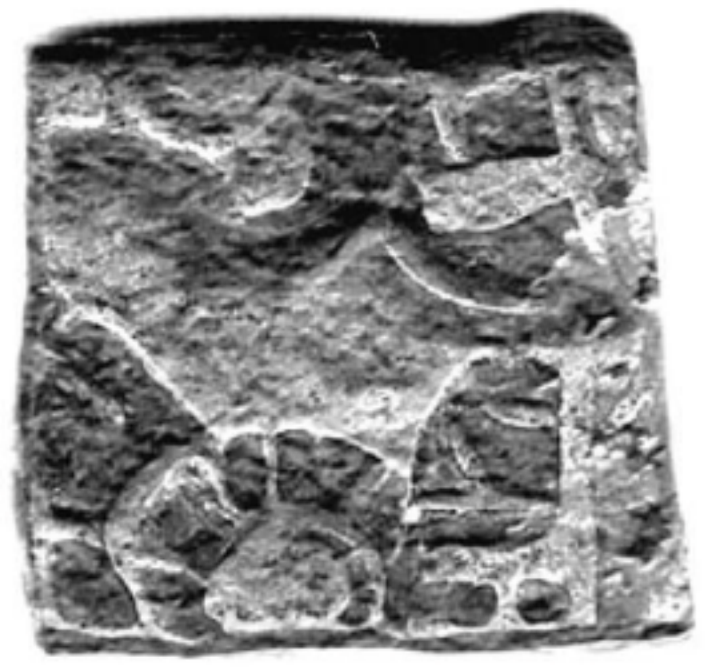
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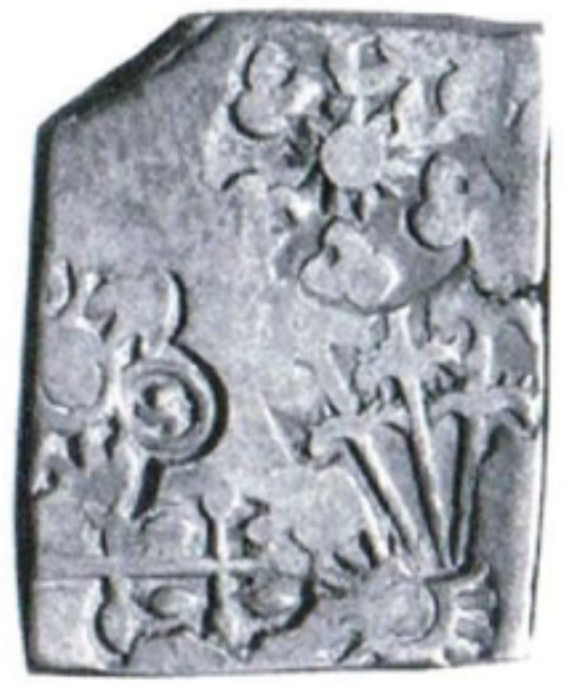
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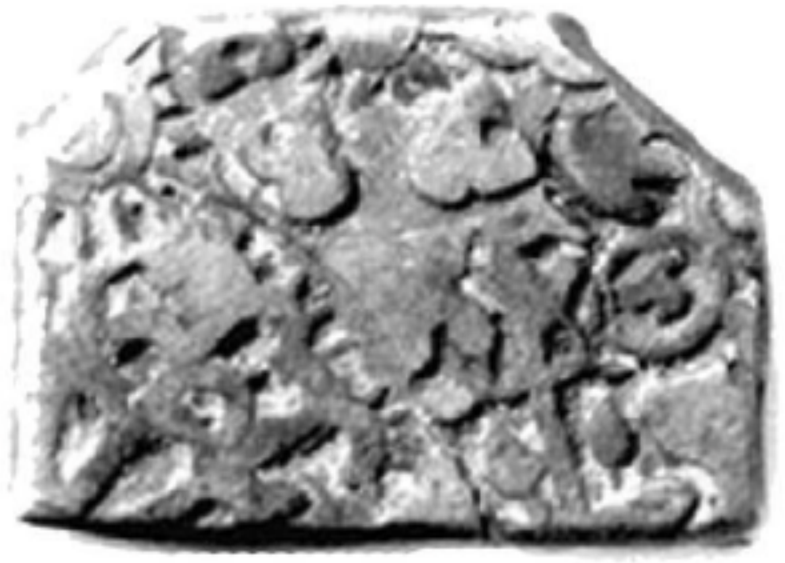
## ENLARGEMENTS SERIES VIII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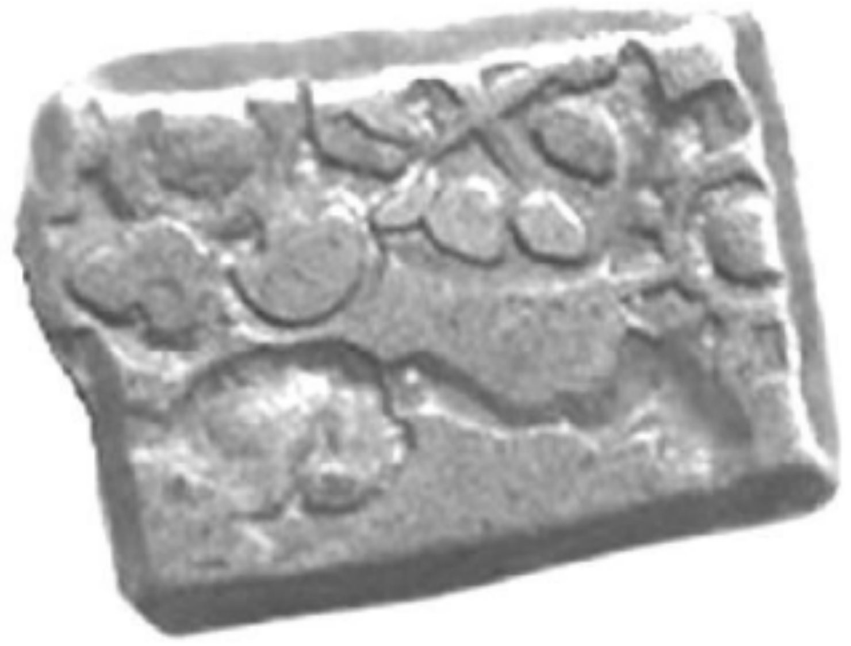
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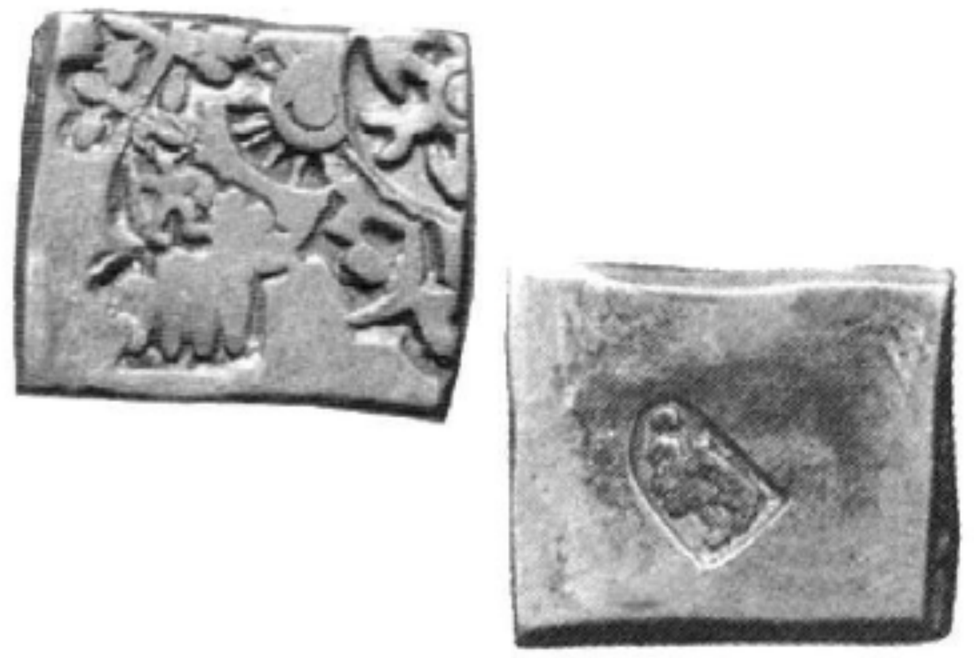
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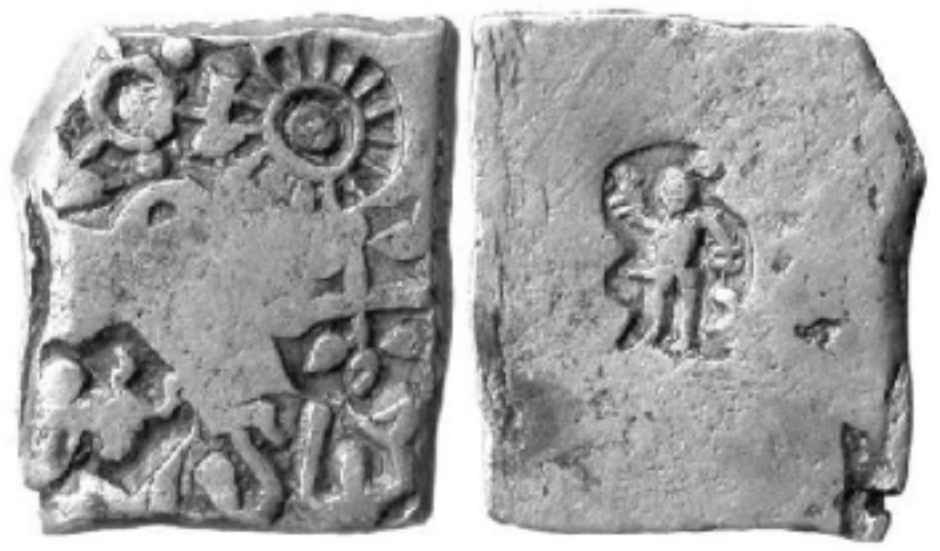
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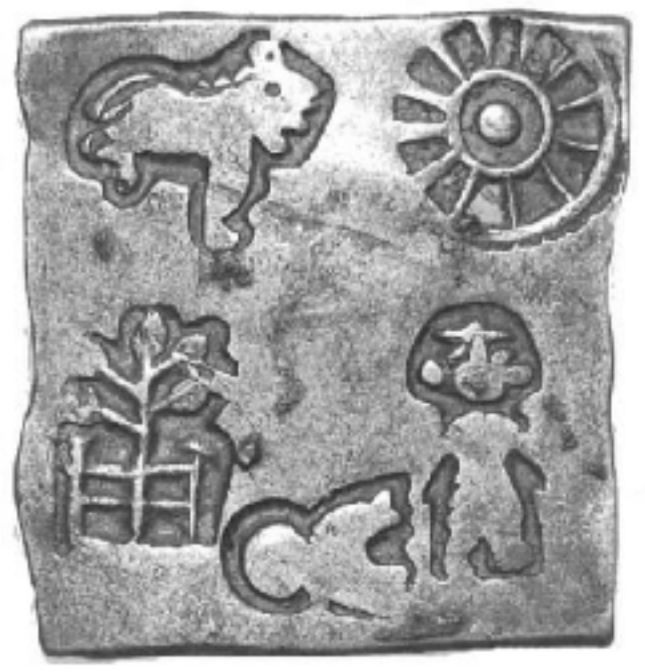
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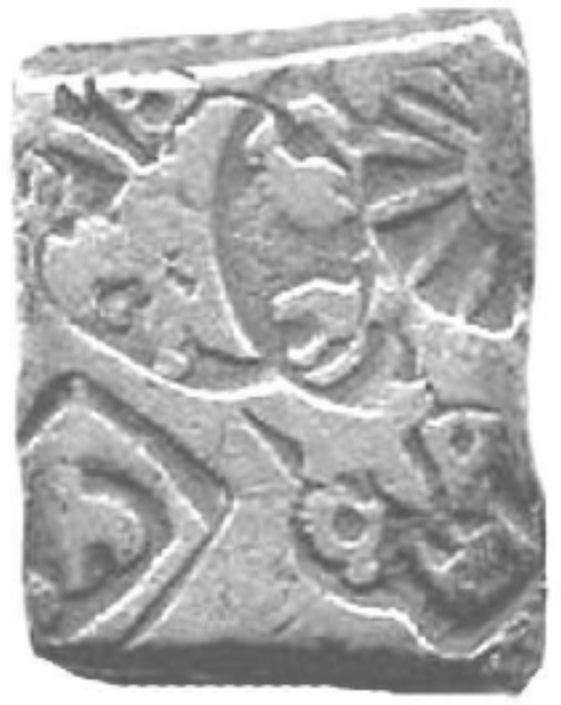
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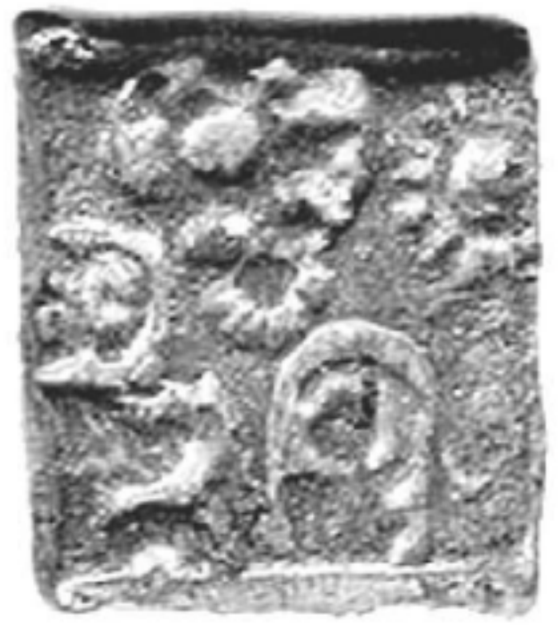
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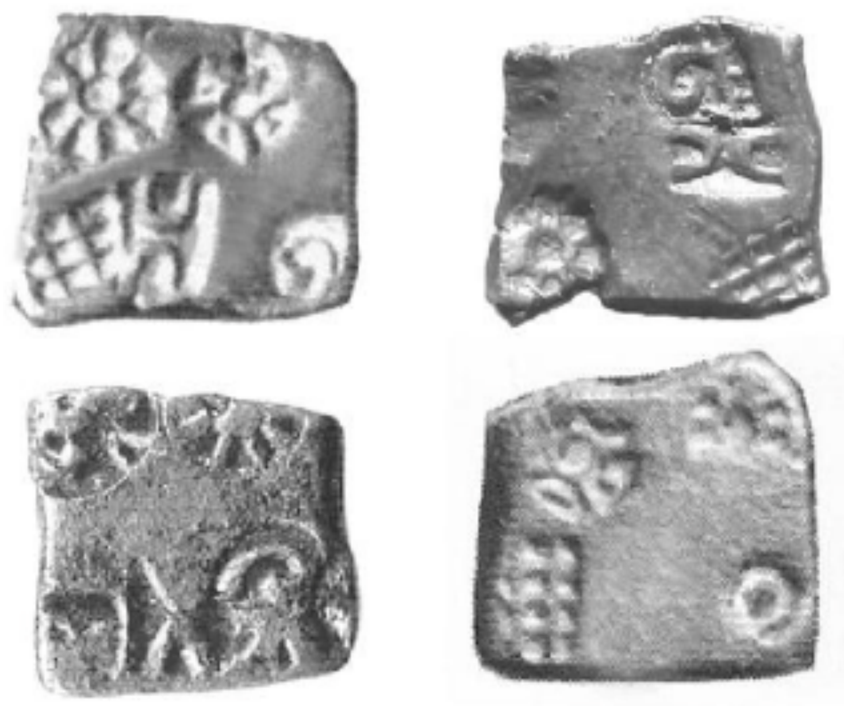
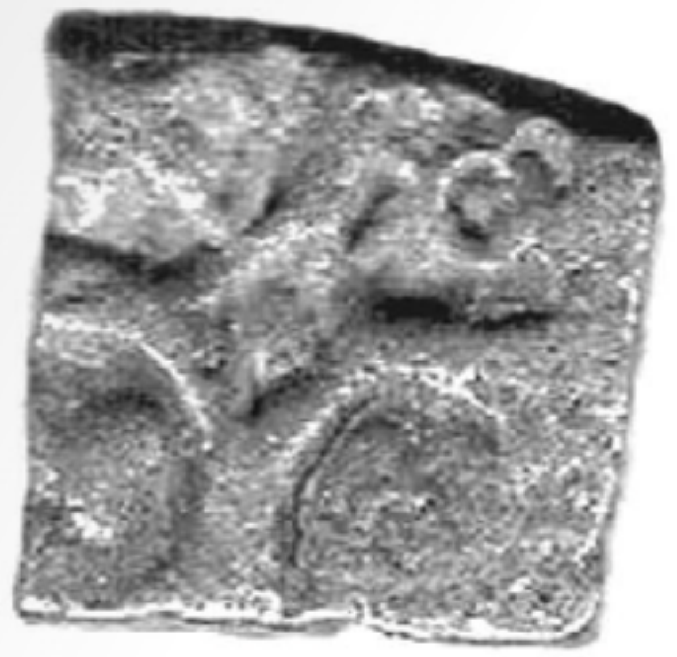
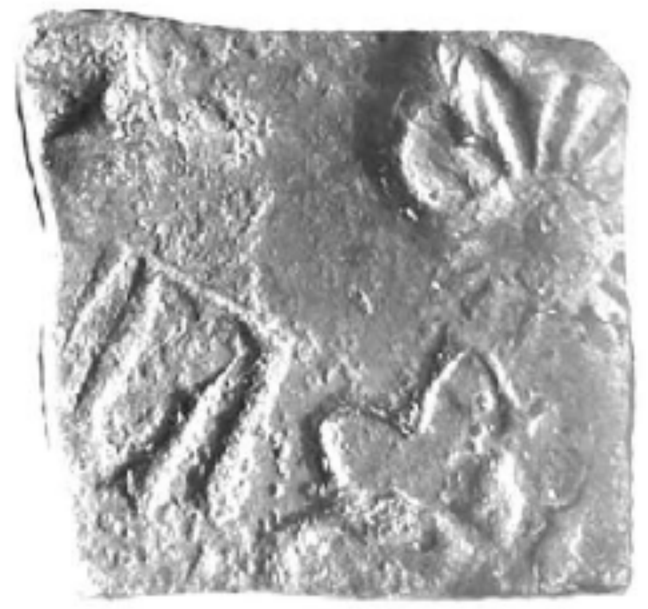
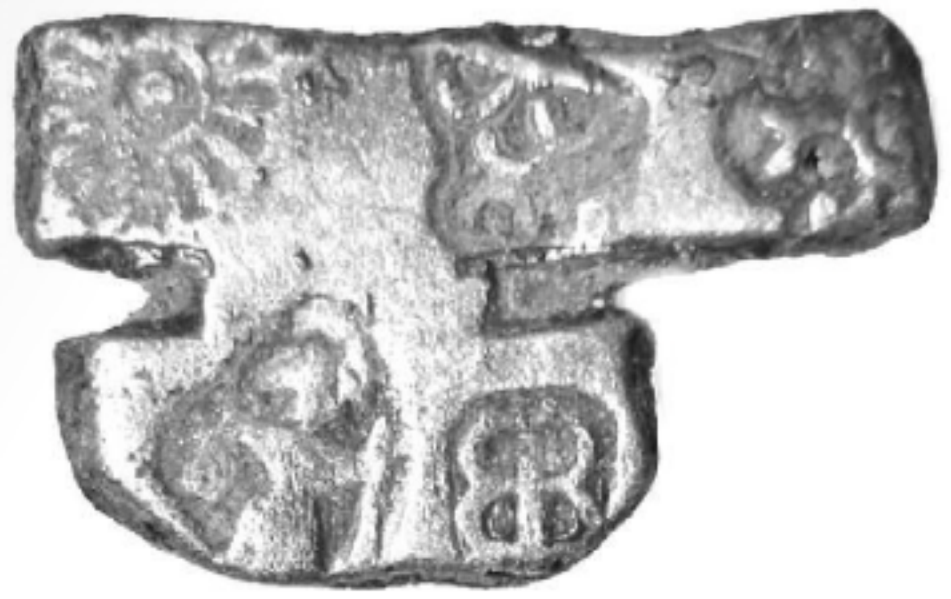
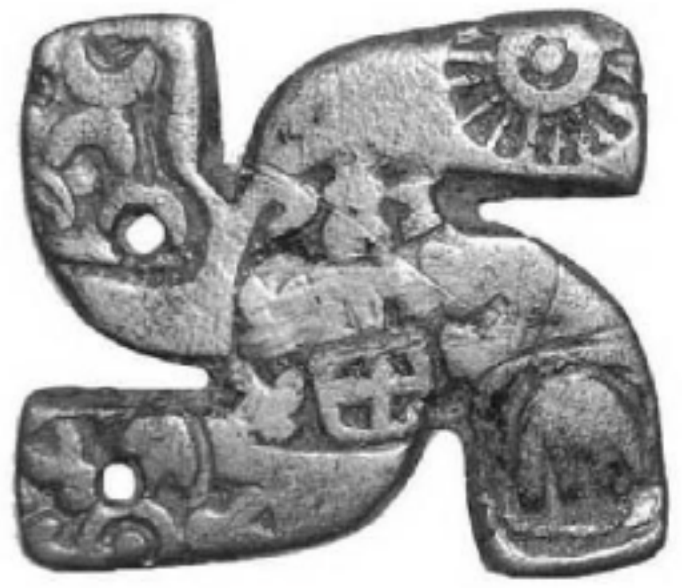
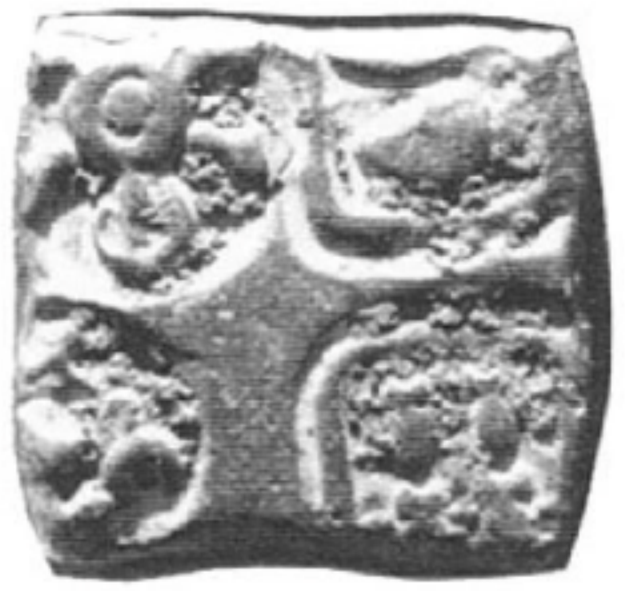
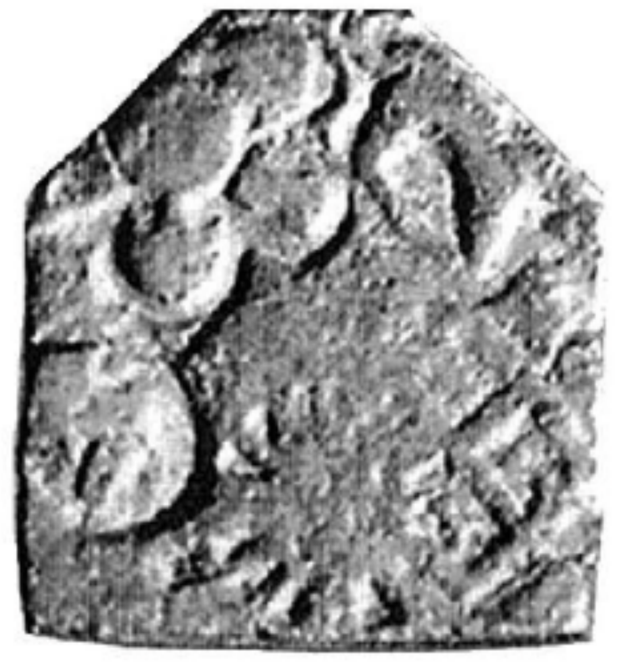
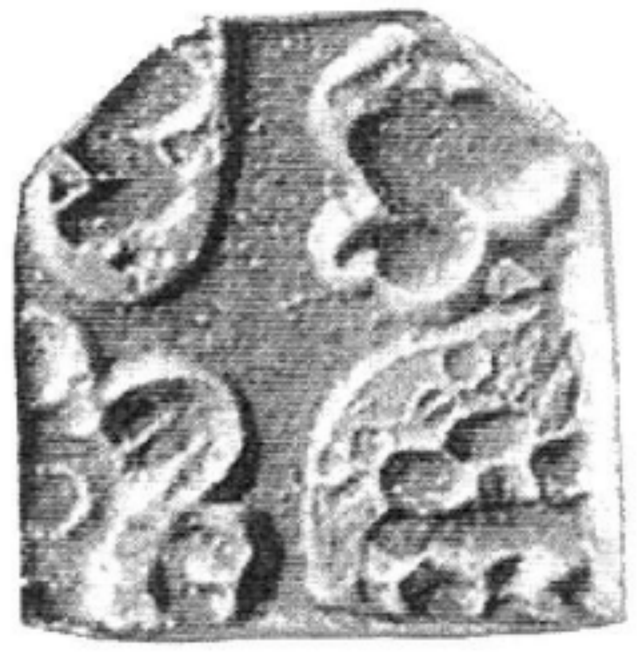
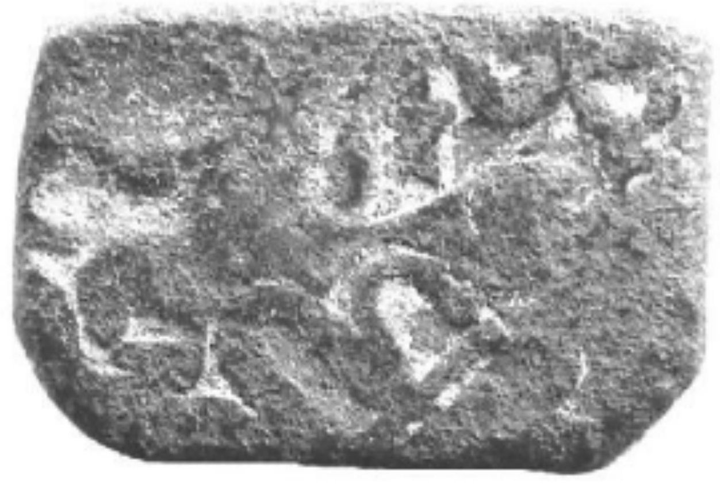
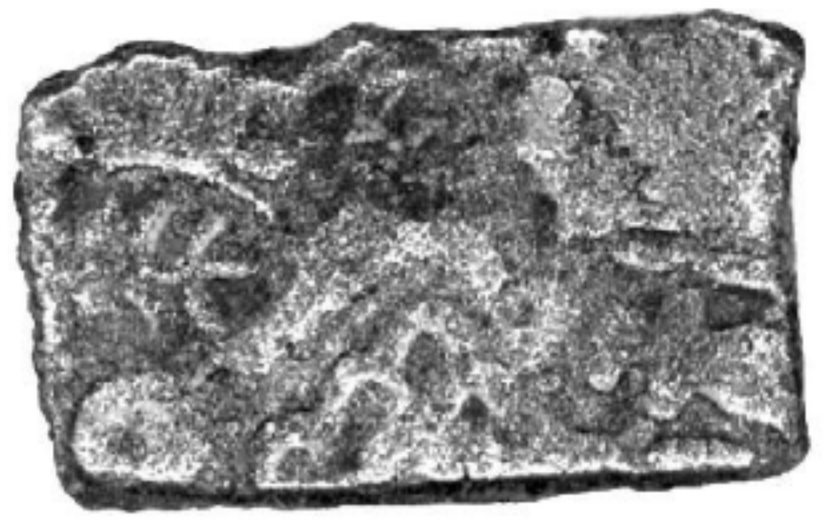
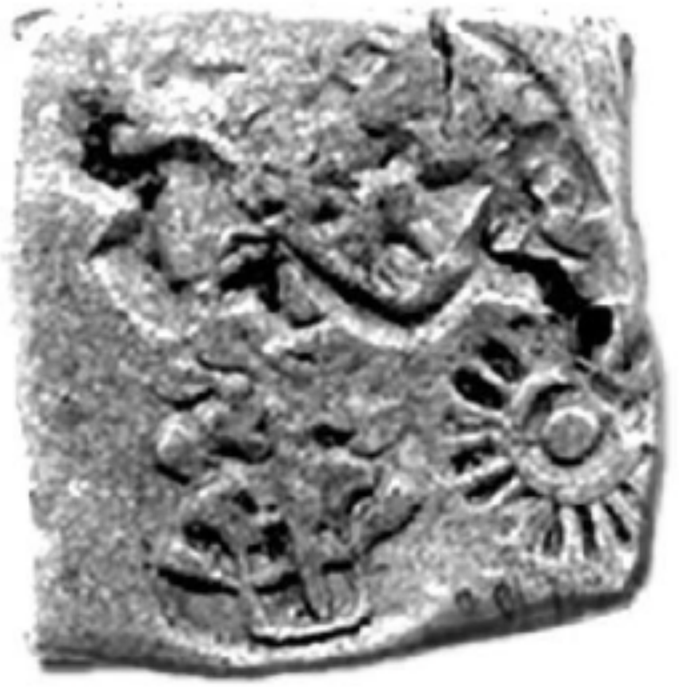
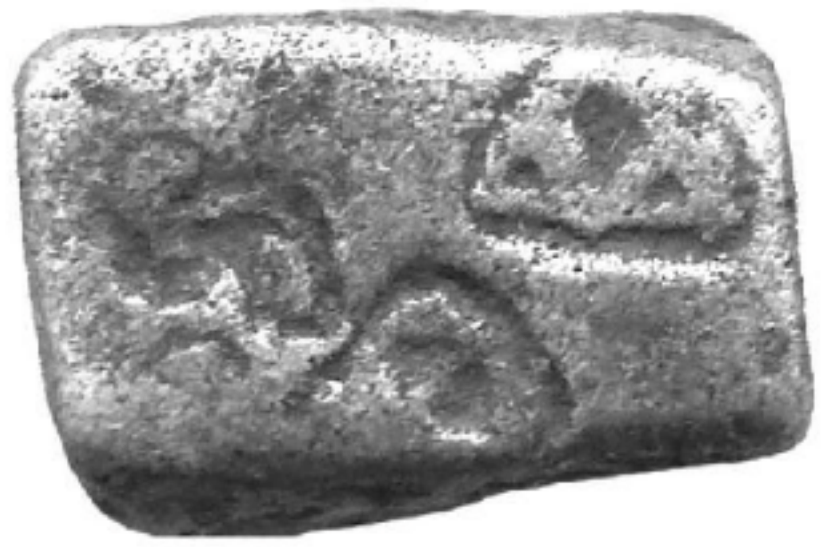
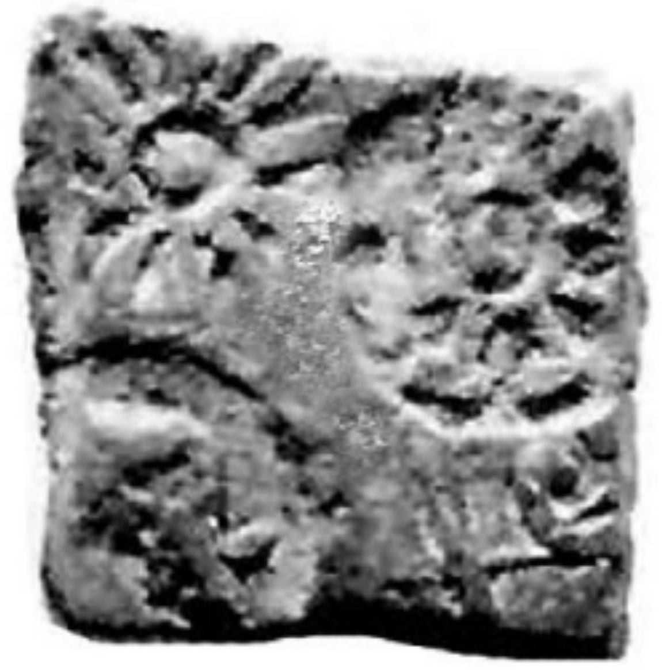
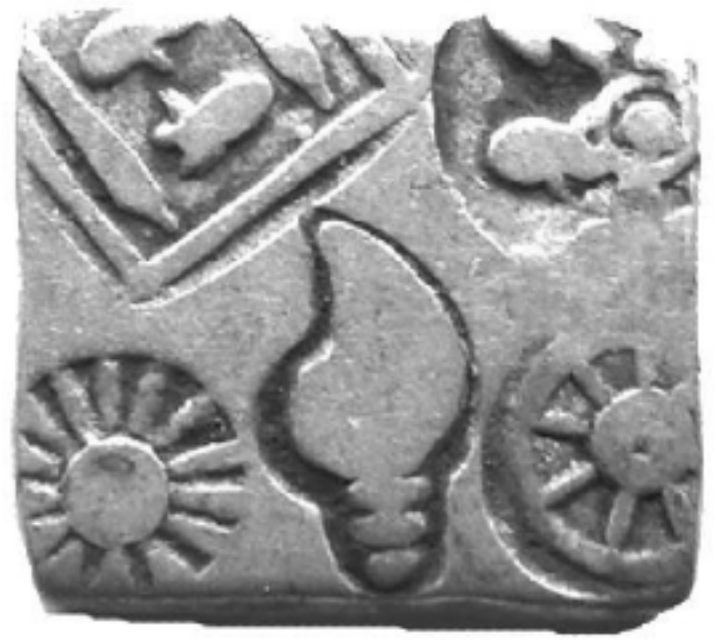
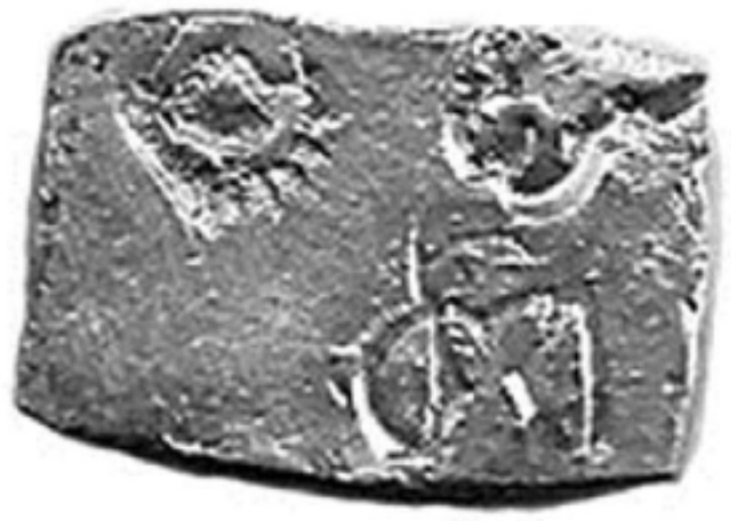

618

## ENLARGEMENTS SERIES VIII

| | |
|---|---|
|  619 |  621 |
|  624 |  625 |
|  628 |  629 |
|  633 |  636 |

## ENLARGEMENTS SERIES VIII

| | |
|---|---|
|  639 |  641 |
|  643 |  644 |
|  648 |  649 |

## In this section

*Miniature reverse marks*

*Lists of official marks*

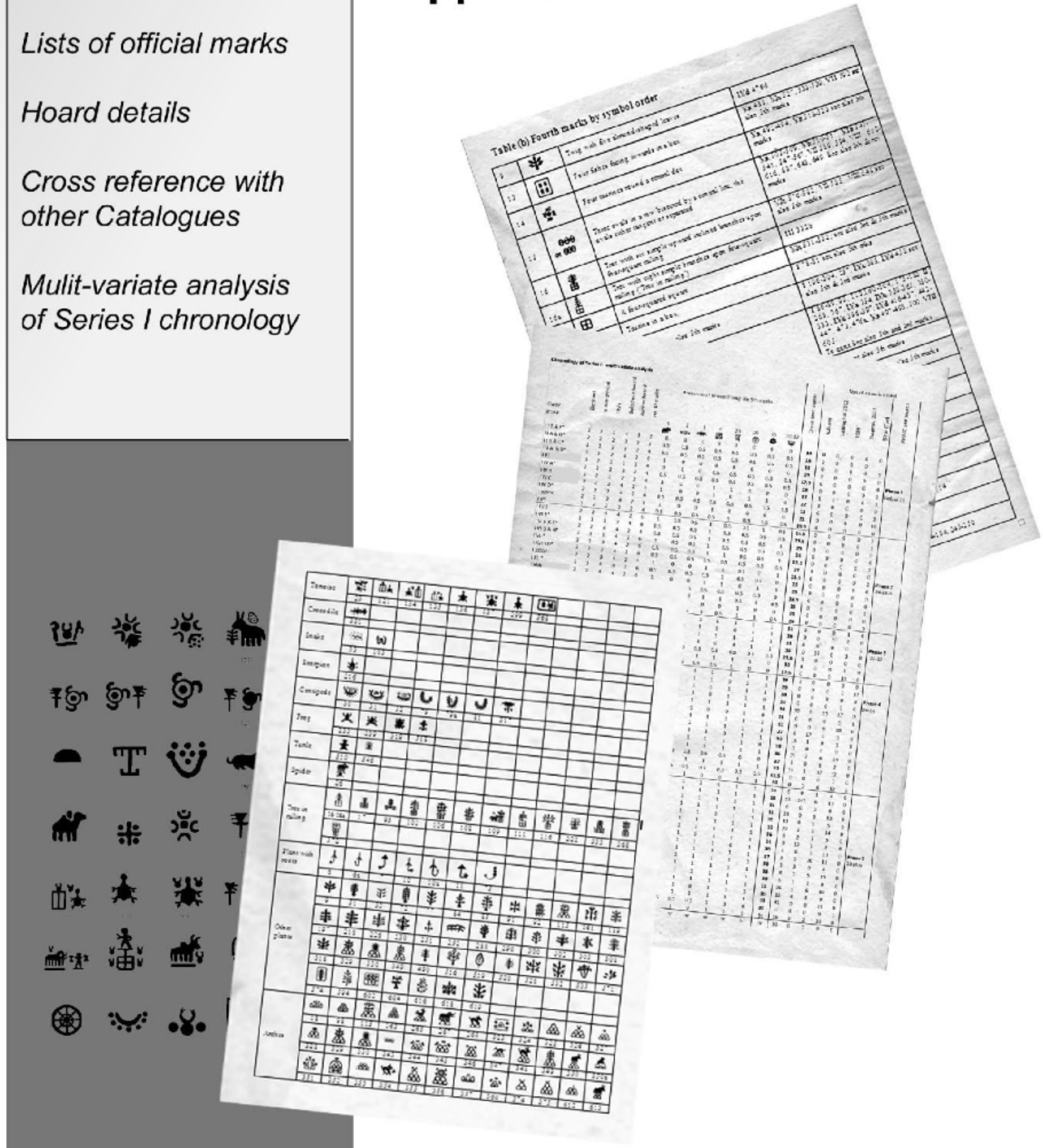
*Hoard details*

*Cross reference with other Catalogues*

*Mulit-variate analysis of Series I chronology*

# SECTION 4

# Appendices



# Appendix 1 Miniature Reverse marks

Miniature marks, discussed in detail in the section on Bankers Marks, are defined as copies of official marks but at reduced size, that were added by the mint authority to a proportion of circulating coins of Series II to IVd or possibly early Series Va. They are recognised from two strict rules – exact imitation of official forms, and recurrence. Using these constraints the table shows a conservative list. It excludes the so-called Bold marks that appear on some coins. There may be further genuine Miniature marks yet to be identified.

The rarity shown in the Table is based on a record of over 1000 coins of Series II to IVd examined in trade, using the same rarity scale as the main Catalogue, although this may not be strictly comparable as many more coins have been sampled for that.

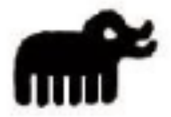
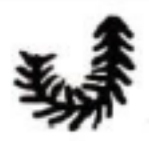
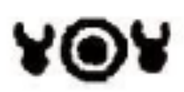
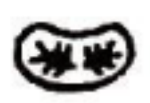
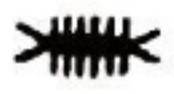
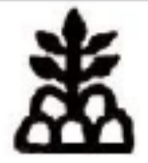
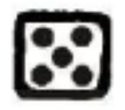
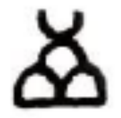
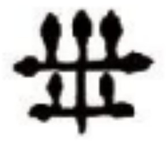
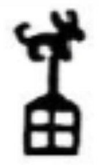
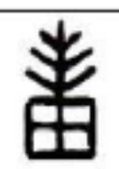
| Mark no. | Mark | Series* | Rarity | Mark no. | Mark | Series* | Rarity |
|---|---|---|---|---|---|---|---|
| 1 |  | I-VIb | VR | 81 |  | III | VR |
| 2 |  | I-Va | R | 301 |  | II | XR |
| 3 |  | I-IVd | VR | 329 |  | IVa/IVd | XR |
| 4 |  | I-IVa | VR | 374 |  | VIa-b | C |
| 5 |  | III-VIb | XR | 472 |  | VII | S |
| 16 |  | IVd-Vb | R | | | | |

Table 21: Miniature reverse marks. * Series in which the mark is used as an official obverse mark.

# Appendix 2: Tables of official marks used on punchmarked coins

These tables are intended to aid identification as well as being a record of all the known official marks.

## Tables of Fifth, Fourth, and Third marks (Tables 1-3)

In these three tables, each mark is drawn and described and the coin types on which it is found are listed. The tables are arranged in sequential order of marks, not the order they appear in the Catalogue.The tables are an aid to identification. Once a symbol has been found using Appendix 3 its number can be looked up in Appendix 2 and an identification can be made.

In describing the marks, care has been taken not to use words for objects which may have only a coincidental resemblance, for example the word 'caduceus', formerly applied to symbol 15 is now described only as 'Three ovals in a row bisected by a central line'. However the names for the 'taurine' (mark 167) 'standard' (e.g. mark 138) 'srivasta' (e.g. mark 370) and Ujjain (547) symbols are so commonly used and understood they are retained. Marks which could either be trees or plants are called 'plants'.

For fifth marks, the number given to the mark is the same as the variety number in the Catalogue. By adopting this system, any new variety coming to light since the first edition within an existing class or group can take its place in the Catalogue without upsetting the original classification.

Where marks show minor variations which nevertheless appear to be deliberate, e.g. the varying symbols above the back of the deer on mark 21, such variations are subclassed a, b, etc. Where a mark has not been observed in its entirety, but has characteristics suggesting it is unlike any other mark, it is drawn in complete form if that can reasonably be deduced (for example mark 337) or incomplete form where it cannot (430, 433). Marks that are substantially incomplete are drawn as seen in the Catalogue but not given mark numbers in Appendix 2. If a mark occurs in more than one function, it is cross-referred and listed again in the other function. For example mark 16, tree in railing, is seen as a fifth mark, a fourth mark and a reverse mark, and therefore appears three times in the Tables, but it always retains the same number, 16.

The new marks used in Series 0 are included in Tables 2 and 3.

### Appendix 2 Table 1: Fifth marks by symbol order

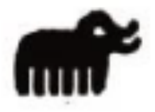
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 1 |  | Elephant right (varieties occur, see text) | **I** 8, 20, 34, 36f, 36j, 39, 48, 60, 65b, 65e, 65g, 66c, 72, 77d, 82, 86, 90, 94a, 101, 102, 112h, 115e, 119, 135, 143b, 148, 157, 160, 165, 175, 183, 188, 188*, 196, 205, 213, 219, 233, 243, 251, 258, 264/2a, 264/3a, 264/4a, 264/5a, 264/6a, 264/6b, **I/II** 279a, **II** 273, 275, 275a, 276, 280, 283, 283a, 285, 285a, 286a, 288, 290a, **III** 291, 295, 301, 302, 305, 314, 317, 319, 320, 321, 331, 332; 333, **IVa** 335, 338, 340, 350, 352, 354, 390, **IVb** 355, 359, 368, 370, 372, 379, 379a, 381, **IVc** 384, 395, 396a, **IVd** 398, 405, 406, 410, 416, 417, 438, 439, 442, 448, 450, 463, 464, 467, 472, 476b, 476d, **Va** 477, 501, **VIb** 542 **VIII** 597 |

Table 1

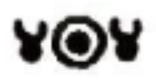
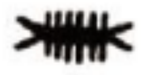
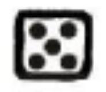
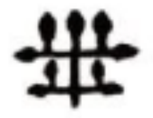
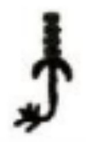
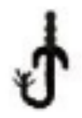
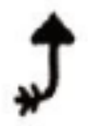
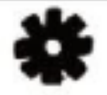
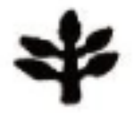
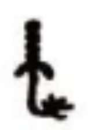
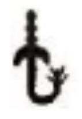
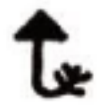
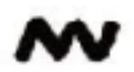
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 2 |  | Dot within circle flanked by two taurines | **1** 40, 49, 61, 77e, 82a, 86a, 89f, 91, 95, 103, 116, 120, 124, 136, 144, 149, 158, 161, 166, 176, 184, 189, 197, 206, 214, 220, 227, 234, 244, 252, 259, **I/II** 279 **II** 267, 270, 271, 272, 277, 279, 281, 286, 289, **III** 292, 297*, 297**, 296, 297, 297a, 303, 306, 322, 332a, **IVa** 341, **IVb** 356, 360, 367, **IVd** 407, 411, 418, 443, 451, 476a, **Va** 500 |
| 3 |  | Centipede-like insect | **1** 50, 104, 111c, 125, 161a, 177, 198, 214a, 220a, 228, 234a, 244a, 253, **I/II** 279b, **II** 265, 266, 268, 269, 274, 278, 282, 284, 287, 290, **III** 307, 323, **IVa** 342a, 346, 347,348, **IVb** 357, 361, 371, 375, **IVd** 408, 444, 444a, 452 |
| 4 |  | Central dot surrounded by four dots arranged quadrilaterally all within a square frame | **I** 21, 35, 36k, 40a, 47, 51, 61a, 65c, 65h, 65m, 66d, 73, 78, 86b, 89g, 92, 95a, 96, 101a, 105, 111d, 112j, 113, 116a, 120a, 126,137, 144a, 150, 162, 167, 178, 184a, 190, 199, 207, 215, 221, 229, 235, 245, 253a, 260, 264/1a, 264/2b, 264/3b, **I/II** 279c, **III** 298, 324, **IVa** 336, 341a, 353 |
| 5 |  | Candelabrum | **III** 325, 325a, **IVa** 391, **IVb** 374, 376, 378, **IVd** 399, 404, 412, 419, 453, 468, 476, **Va** 478, 485, 495, 497, **Vb** 526a, **VIb** 544, **VIII** 602, 603 |
| 6 |  | Plant with single stem and extended top, roots turned to the left | **III** 299, 308, 315, 316, 326, 334b, **IVb** 358, 369, 383, **IVd** 420, 445, 454, 462, 465, 473 |
| 6a |  | As 6 but the roots extend vertically upwards more | **III** 308a, **IVd** 420a, 476c |
| 7 |  | Plant with single stem and triangular top, roots turned to the left. There is doubt about this mark, which is easily confused with mark 6 | **III** 293, 300, 309, **IVa** 351, **IVb** 379b, **IVd** 421, 446, 455, 466 |
| 8 |  | Eight spokes around a circle with small hole in centre | **III** 300a, 318, **IVa** 337, 342 |
| 9 |  | Twig with five almond-shaped leaves | **III** 294, 304, 310, 314a, 326a, **IVb** 366, 380, **IVc** 386, 389, 397, 397a, **IVd** 422, 422a, 440, 449, **Va** 492. See also 4th marks |
| 10 |  | Plant with single stem and extended top, roots turned to the right | **III** 327, **IVa** 362, **IVb** 373, **IVd** 423, 447,463a |
| 10a |  | As 10 but the roots extend vertically upwards more | **III** 328 |
| 11 |  | Plant with single stem and triangular top, roots turned to the right. There is doubt about this mark, which is easily confused with mark 10 | **IVb** 363 |
| 12 |  | A zigzag of five lines | **III** 329, **IVa** 392, **IVb** 364, 374a, **IVd** 412a, 424, 456 |

Table 1 contd.

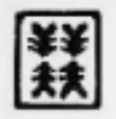
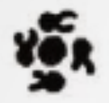
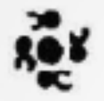
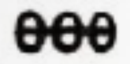
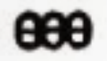
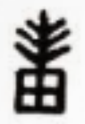
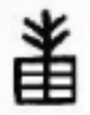
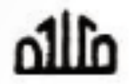
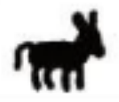
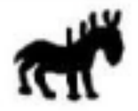
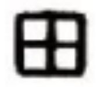
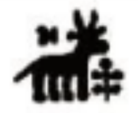
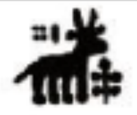
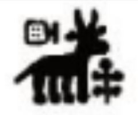
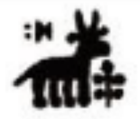
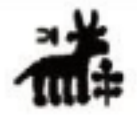
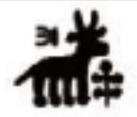
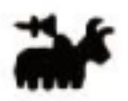
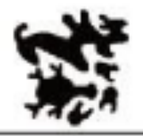
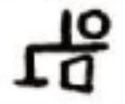
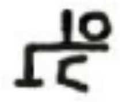
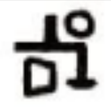
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 13 |  | Four fishes in a box facing inwards | **IVb** 382, **IVc** 396, **IVd** 400, 404, 409, 413, 425, 441, 441a, 457, 469, 475, 475a. See also 4th marks |
| 14 |  | Four taurines round a central dot | **IVd** 401, 414, 426, 470, **Va** 479, 479a, 502, **VIII** 624. See also 4th & reverse marks |
| 14a |  | As 14 but taurines anti-clockwise | **Va** 479a |
| 15 |  or  | Three ovals in a row bisected by a central line, the ovals either tangent or separate | **IVd** 402, 415, 427, 458, **Va** 480,. See also 4th & reverse marks. |
| 16 |  | Tree with six simple branches upon four-square railing ('Tree in railing') | **IVd**, 471, **Va** 496, 496b, 499, **Vb** 526, **VIII** 645, 648. See also 4th & reverse marks. |
| 17 |  | Tree with four simple branches upon six-square railing | **IVd** 459, **Va** 481, 486, 486a |
| 18 |  | A base supporting three vertical poles, two with slanted tops, all flanked by two arches | **Va** 482, 487, 487a, **Vlb** 543, **VII** 584, 595, **VIII** 598, 642 |
| 19 |  | Donkey or horse facing right | **VIa** 528,**VIb** 545. See also 3rd marks |
| 19a |  | Donkey or horse with mane right. Minor variants occur. | **Va** 496a, 498. See also 3rd and 4th marks |
| 20 |  | A four-squared square | **Va** 506, **VIb** 547. See also 4th & 3rd marks |
| 21 |  | Deer before a twig; above two dots joined together with vertical line to their right | **Va** 507, **Vb** 510, 516, **Vlb** 540, 548 |
| 21a |  | As 21a but the four dots not in a square | **Va** 507a, **Vb** 512, 517 |
| 21b |  | As 21 but above four dots in a square with vertical line to their right | **Va** 508, **Vb** 511, **VIb** 549 |
| 21c |  | As 21a but above two dots, a vertical line, and a smaller vertical line joined to it | **Vb** 513 |
| 21d |  | As 21a but above a vertical line, and two horizontal prongs attached to the left | **Vb** 514 |
| 21e |  | As 21a but above a vertical line, and three horizontal prongs attached to the left | **Vb** 515 |
| 22 |  | Bull right with standard horizontally above | **VIa** 533, **VII** 592 |
| 23 |  | Dog with pup in mouth, tortoise and three taurines below | **VIb** 550, **VII** 589, 594, **VIII** 615 |
| 24 |  | Steelyard (balance) with pan to left | **VIb** 568, **VII** 590, 592b |
| 24a |  | As 24 but weight at foot open | **Vlb** 569 |
| 25 |  | As 24 but pan to right | **VIb** 570, **VII** 591, 593 |

Table 1 contd.

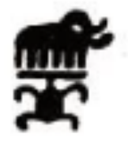
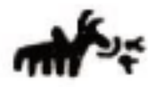
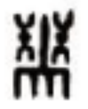
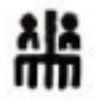
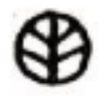
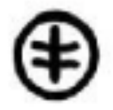
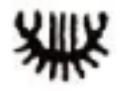
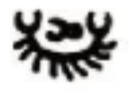
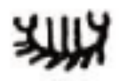
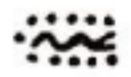
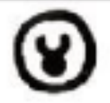
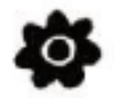
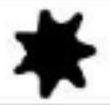
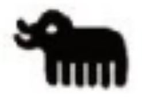
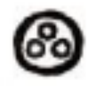
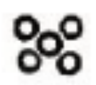
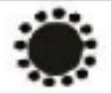
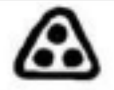
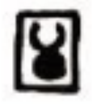
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 26 |  | Elephant right over spider-like insect | **VIb** 573, **VII** 586, 596, **VIII** 599 |
| 27 |  | Bull right with cusp and two taurines in front | **VIb** 571, **VII** 587, 588, 596a |
| 28 |  | Two double-ended taurines either side of a rake with four prongs | **I** 41, 52, 61b, 66, 74, 87, 93, 95b, 96a, 106, 112, 112g, 113a, 116b, 121, 127, 138, 145, 151, 162a, 168, 179, 191, 200, 208, 215a, 221b, 230, 236, 254, 264/1b, 264/4b **I/II** 279d |
| 28a |  | As 28 but normal taurines | **I** 22, 38a |
| 29 |  | Twig with four straight branches sloping upwards tangent to and within a circle | **I** 36, 42, 53, 67, 79, 88, 97, 128, 147, 152, 169, 180, 185, 192, 201, 216, 222, 237, 246, 117, 257, 261 |
| 29a |  | As 29 but branches tend to horizontal and not tangent to circle | **I** 53a, 162c |
| 30 |  | Curled centipede with pincers at both ends | **I** 36L, 42, 53, 67, 79, 88, 97, 128, 147, 152, 169, 180, 185, 192, 201, 216, 222, 237, 246, 255, 257, 261, 264/2c |
| 31 |  | As 30 but oblique legs on underside only and taurine within the curl above | **I** 181 |
| 32 |  | As 30 but oblique legs on underside | **I** 98, 264/1c, 264/2d |
| 33 |  | Snake with open mouth surrounded by dots on three sides | **1** 62, 107, 133, 140, 154, 163, 171, 194, 203, 210, 262 |
| 34 |  | Circle enclosing taurine | **I** 44, 55, 81, 89, 141, 164, 211,238 |
| 35 |  | Flower from above with central ovary and (usually seven) petals | **I** 35a, 36m, 45, 47a, 56, 62b, 69, 74c, 81a, 82c, 89a, 89h, 93b, 95e, 101c, 108, 112b, 112L, 114a,118, 122c, 131, 141a, 146, 155, 164a, 172, 181a, 186, 195, 195*, 211a, 216b, 223, 230d, 238a, 248, 256b, 262a, 264/2e |
| 35a |  | As 35 but solid centre | **I** 172a |
| 36 |  | Elephant left | **I** 89j, 89k, 95f, 99, 109, 112c, 115, 122d, 132, 134a, 146a, 231,264/1d, 264/3c, **III** 332b. See also 3rd marks |
| 37 |  | Circle containing three outline circles | **I** 110, 123, 133,141b, 143a, 155a, 173, 195b, 211b, 231a, 239, 249, 256c, 262b, 264/1e |
| 38 |  | Five outline circles one in the centre and four surrounding | **I** 46, 156, 173a, 187, 212, 224, 231b, 239a, 250 |
| 39 |  | Large dot with small pellets around | **I** 159, 212a, 240, 263 |
| 40 |  | Triangle enclosing three dots | **I** 110a |
| 41 |  | Taurine within rectangle | **I** 164c,174. See also 4th marks |

Table 1 contd.

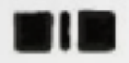
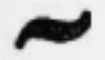
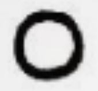
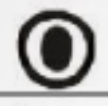
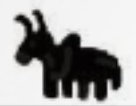
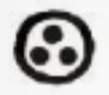
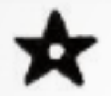
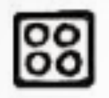
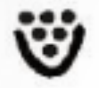
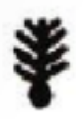
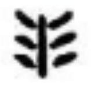
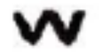
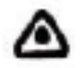
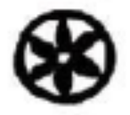
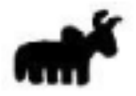
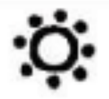
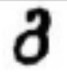
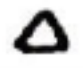
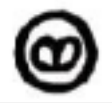
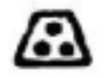
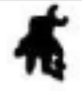
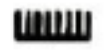
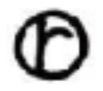
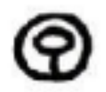
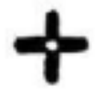
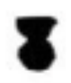
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 42 |  | Two squares with vertical line between; the squares sometimes open | **I** 63, 89b, 111, 141c, 146b, 231c, 264 |
| 43 |  | Tilde-like shape, perhaps a worm | **I** 23, 46b, 63a,69a, 75, 95g, 115a |
| 44 |  | Large outline circle | **I** 36c, 36g, 66b, 76, 111a, 264/1g |
| 45 |  | Circle enclosing an oval solid dot | **I** 24, 69b, 95h, 100, 217, 232 |
| 46 |  | Bull left | **I** 57a, 70, 77. See also 4th & 3rd marks |
| 47 |  | Circle enclosing three dots | **I** 46c, 58, 65L, 71, 77a, 101e, 115b, 264/4c |
| 48 |  | Five-pointed solid star with central piercing | **I** 10, 25 |
| 49 |  | Square enclosing four circles | **I** 83 |
| 50 |  | Crescent facing up enclosing six dots arranged 3-2-1 | **I** 134 |
| 51 |  | A plant with four straight upward-inclined branches and a broader base with a dot or protrusion at the foot | **I** 11, 26 |
| 52 |  | A simple twig with three (sometimes four) straight upward-inclined branches, no buds or leaves | **I** 84, 112c, 218. |
| 53 |  | A W-shaped mark | **I** 27, 63b |
| 54 |  | Triangle enclosing a dot | **I** 95k, 112f, 115c, 118a, 134b, 142, 146d |
| 55 |  | Circle with six spokes and a central piercing. Note this may be a bankers mark | **I** 182 |
| 56 | | Beetle in a box | **I** 204 |
| 58 |  | Bull right | **I** 59, 241, 264a, **VIII** 605. See also 4th and 3rd marks |
| 59 |  | Circle with eight dots around | **I** 4 |
| 60 |  | A shape like a hook on an oval ring | **I** 5 |
| 61 |  | Simple outline triangle | **I** 13. 65k, 77c, 264/1h |
| 62 |  | Circle enclosing two conjoined ovals | **I** 14 |
| 63 |  | A frustum enclosing three dots | **I** 28 |
| 64 |  | A shape like a human holding an uncertain object low down at left | **I** 29 |
| 65 |  | Comb-like object | **I** 30 |
| 66 |  | Circle encasing a vertical line to which a curved line is attached | **I** 31 |
| 67 |  | Circle within which a vertical pole holding up an oval outline | **I** 32 |
| 68 |  | Cross with central piercing | **I** 33 |
| 69 |  | Wide-topped pot | **I** 38. See also 4th marks |

Table 1 contd.

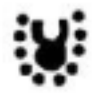
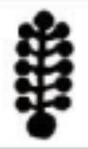
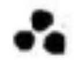
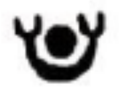
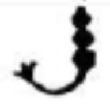
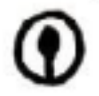
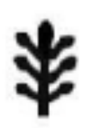
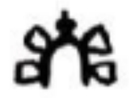
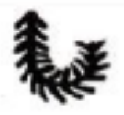
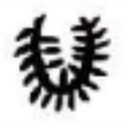
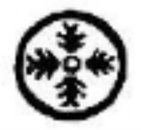
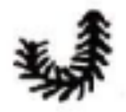
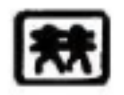
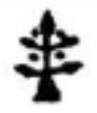
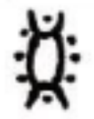
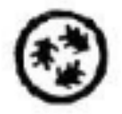
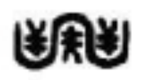
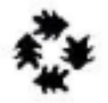
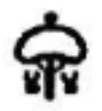
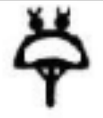
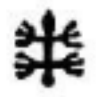
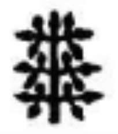
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 70 |  | Taurine with dots round the sides and bottom. See also 3rd and 4th marks | **I** 65. See also 3rd & 4th marks |
| 71 | | Human-like figure (?) facing | **I** 85, 95m |
| 72 |  | Plant with eleven branches each with single round leaves on a circular base | **I** 46d, 94 |
| 73 |  | Three dots with no outer circle | **I** 143 |
| 74 |  | Solid dot around which an arc with bifurcated ends | **I** 225 |
| 75 |  | Vertical pole containing three dots with three-pronged tail to left | **I** 226 |
| 76 |  | Circle enclosing a vertical pole holding up a solid oval | **I** 46e, 59a, 115d, 242 |
| 77 |  | A twig with a bud at the top of the stem and three upward-inclined branches ending in buds. Minor variants are included in this category | **III** 330 |
| 78 |  | Dome with four triangles two each side and a bulbous point at the top, perhaps representing a building | **III** 334 |
| 79 |  | Centipede with tail to right | **III** 311, 304a, **IVc** 387 |
| 79a |  | As 79 but tail to the left and extended | **III** 334a |
| 80 |  | Circle enclosing four fishes facing pointing towards an annulet in the centre | **III** 312 |
| 81 |  | Centipede with tail to left | **III** 294a, 312a, 313 |
| 83 |  | Two fishes side by side in a rectangle, fins touching | **IVa** 344 |
| 84 |  | Plant with triangular base, five branches with single leaves and four dots between the leaves | **IVa** 345, 349 |
| 86 |  | Ellipse with four legs and dots around, perhaps a beetle | **IVb** 377 |
| 87 |  | Circle enclosing three fishes swimming clockwise | **IVb** 365, 380a |
| 88 |  | Three fishes separated by a wavy line | **IVc** 385 |
| 89 |  | Four fishes swimming clockwise | **IVc** 388 |
| 90 |  | Two taurines either side of a pole supporting a sausage-shaped outline oval with a dot on top | **IVa** 393, **IVd** 403, 428, 460 |
| 90a |  | As 90 but the dot on top is replaced with two taurines | **IVd** 428a |
| 91 |  | twig with four branches each with three leaves, and a single leaf at top | **IVa** 394 |
| 92 |  | Tree with six branches each with three leaves, single leaf at top | **IVd** 429 |

Table 1 contd.

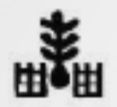
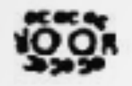
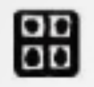
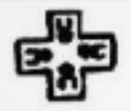
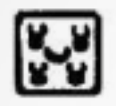
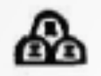
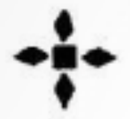
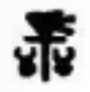
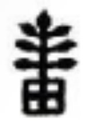
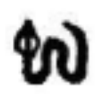
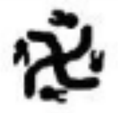
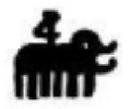
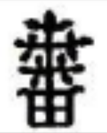
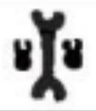
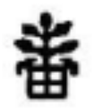
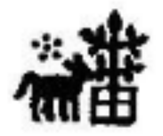
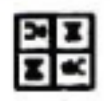
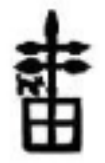
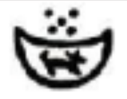
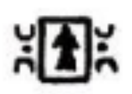
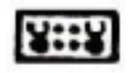
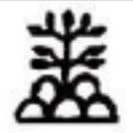
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 93 |  | Tree-in-railing symbol comprising plant with seven leaves and bulbous base and four-square railing each side | **IVd** 430 |
| 94 |  | Two outline circles surrounded by eight taurines going clockwise | **IVd** 431, 461 |
| 95 |  | Square divided into four with a dot in each sector | **IVd** 432. See also 3rd marks |
| 96 |  | Outline cross enclosing four taurines facing outwards | **IVd** 433 |
| 97 |  | Four taurines surrounding a central cusp all in a square | **IVd** 434 |
| 98 |  | Three arches in pyramid form each enclosing a dumbbell symbol | **IVd** 435 |
| 99 |  | Cruciform of four diamonds emanating from a small central solid square | **IVd** 436 |
| 100 |  | Triangle-headed standard with a taurine at each side | **IVd** 437 |
| 102 |  | Four square box supporting a plant with seven ovate/pointed leaves | **Va** 483, 503 |
| 103 |  | Curled snake facing left | **Va** 484 |
| 104 |  | Swastika with anticlockwise-facing taurines in angles | **Va** 489 |
| 105 |  | Elephant right with rider | **Va** 490 |
| 106 |  | Four-square tub supporting a plant with five branches, three leaves on each branch | **Va** 491 |
| 107 |  | Vertical pole with crescent at each end and a taurine on each side | **Va** 493, **Vb** 518 |
| 108 |  | Ornamented four-square box supporting a plant with five leaves | **Va** 494 |
| 109 |  | Four-square box supporting plant with four branches each with three leaves, single leaf at top. To the left a deer eating the plant, above a dot surrounded by five dots | **Va** 505, 505a, **Vb** 519, **VIII** 652 |
| 110 |  | Four-square box with alternate taurines and dumbbells in the quarters | **Va** 509 |
| 111 |  | Four-square square supporting plant with five leaves with pointed ends, to left a small dog facing right. | **Vb** 520-521 |
| 112 |  | Lunette shape within which small dog right, five dots above | **Vb** 522-523 |
| 113 |  | Rectangle enclosing fish, dot with cusps above and below to either side | **Vb** 524 |
| 114 |  | Four dots with a taurine on either side all in a rectangle | **Vb** 525 |
| 115 |  | Five-arched hill supporting a tree with four branches each with three leaves, single leaf at top | **Va** 488, **VIa** 527, 529, 534, **VIb** 551 |

Table 1 contd.

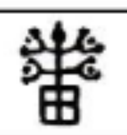
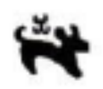
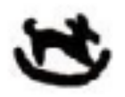
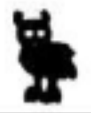
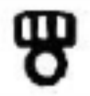
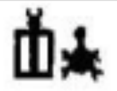
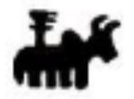
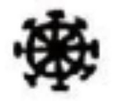
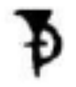
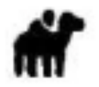
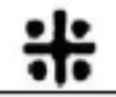
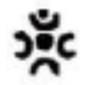
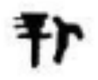
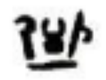
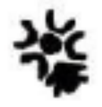
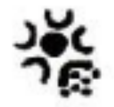
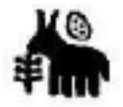
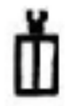
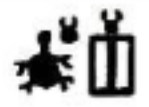
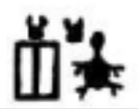
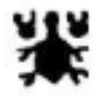
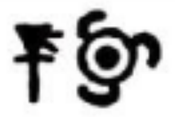
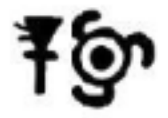
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 116 |  | Four-square box supporting tree with four branches, each with two buds enclosing a dot, single bud at top | **VIa** 530, 535 |
| 117 |  | Dog right with *srivatsa* symbol above | **VIa** 531, 536 |
| 118 |  | Dog right, low upward-facing crescent below | **VIa** 532, 537 |
| 119 |  | Owl facing | **VIa** 538 |
| 120 |  | Outline circle supporting a round-cornered rectangle divided into three compartments | **VIa** 539 |
| 121 |  | Rectangle bisected vertically, taurine above, to right a tortoise | **VIb** 540 |
| 122 |  | Bull right with triangle-headed standard above | **VIb** 576 |
| 123 |  | Waterwheel with eight cups | **VIb** 577 |
| 124 |  | Triangle-headed standard, horizontal line bisecting the support and an arc connected to it to the right | **VIb** 578 |
| 125 |  | Animal (camel?) to right, dot above | **VIb** 579 |
| 126 |  | Square cross with dots in each angle | **VIb** 580 |
| 127 |  | Central dot surrounded by four outward-facing crescents, dot within one | **VIb** 581 |
| 128 |  | Triangular headed standard with wavy-topped pole to right | **VIb** 582, **VII** 585 |
| 129 |  | Taurine with line below, hook to left and elephant goad to right | **VIb** 546 |
| 130 |  | Central dot surrounded by four outward-facing crescents and a beetle | **VIb** 552 |
| 131 |  | As 130 but beetle replaced by crescent and six small dots | **VIb** 553 |
| 132 |  | Deer left eating five-branched plant, oval enclosing four dots above | **VIb** 554 |
| 133 |  | Rectangle bisected vertically, taurine above | **VIb** 555 |
| 134 |  | As 132 but tortoise and taurine to left | **VIb** 556 |
| 135 |  | As 133 but tortoise and taurine to right | **VIb** 557 |
| 136 | | Tortoise with toes | **VIb** 558 |
| 137 |  | Tortoise with two taurines either side | **VIb** 559 |
| 138 |  | Triangle-headed standard with triskeles to left comprising outline circle with dot in centre | **VIb** 560 |
| 138a |  | As 138 but the standard faces to the left | **VIb** 561 |

Table 1 contd.

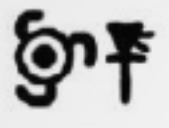
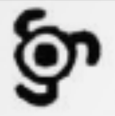
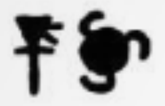
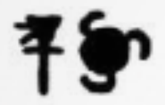
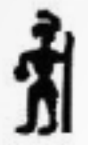
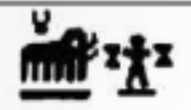
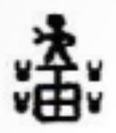
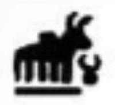
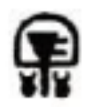
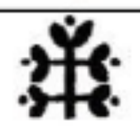
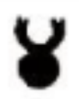
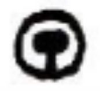
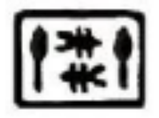
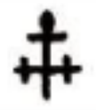
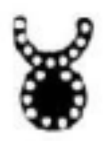
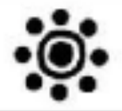
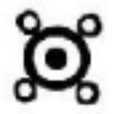
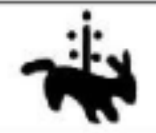
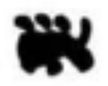
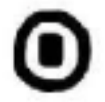
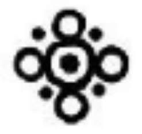
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 139 |  | As 138 but the standard to the right of the triskeles | **VIb** 562 |
| 140 |  | Triskeles as in 138 but alone | **VIb** 563. See also rev. marks |
| 141 |  | As 138 but triskeles has solid centre | **VIb** 564 |
| 141a |  | As 142 but the standard faces to the left | **VIb** 565 |
| 142 |  | Human figure left, vertical pole in left hand and pot in right | **VIb** 566, **VIII** 613-615, 623, 624 |
| 143 |  | Elephant right, taurine above, to right human figure facing with a dumbbell each side | **VIb** 567 |
| 144 |  | Four-square box supporting a plinth on which stands a human figure facing with a crescent in right hand. Two taurines on either side | **VIb** 572, **VIII** 625 |
| 145 |  | Bull right with taurine to right and ground line below | **VIb** 574, **VIII** 600 |
| 146 |  | Triangle-headed standard with top part encased in an outline half circle, two taurines below | **VIb** 575, **VIII** 601 |
| 161 |  | Plant with five branches each bearing two leaves with a dot between them | **VIII** 612 |
| 167 |  | Taurine with bifurcated ends | **VIII** 609. See also 4th & 3rd marks |
| 175 |  | Outline circle enclosing a vertical pole supporting a solid oval | **I** 64, 264/1j |
| 215 |  | Rectangle enclosing two fishes facing in opposite directions and between two spears | **IVa** 339, 343 |
| 251 |  | Vertical pole supporting plinth above which a bud, Latin cross tangent below at either side | **IVd** 474 |
| 484 |  | Taurine with raised dots round the periphery | **I** 7a |
| 486 | | Beetle | **I** 12 |
| 487 |  | Solid dot enclosed by circle around which eight dots | **I** 46f, 89d, 264/7a |
| 488 |  | Solid dot enclosed by circle around which four small tangent outline circles or dots (on 89e) | **I** 65a, 89e, |
| 492 |  | Dog hanging from a pole either side of which two or three dots | **I** 95n |
| 493 |  | Uncertain object. Possibly animal head right with mane | **I** 134d |
| 494 |  | Circle enclosing a solid rectangle | **I** 146e |
| 496 |  | Circle enclosing solid dot, outside four tangent outline circles and four dots in cruciform arrangement | **I** 146f |

Table 1 contd.

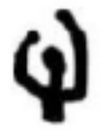
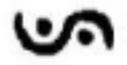
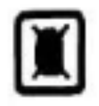
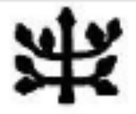
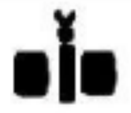
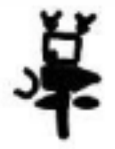
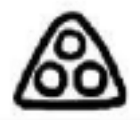
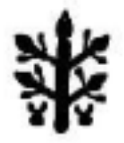
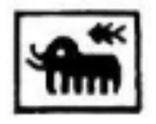
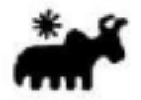
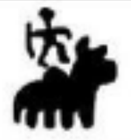
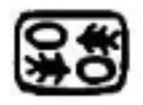
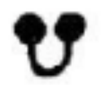
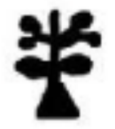
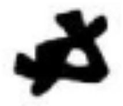
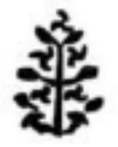
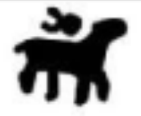
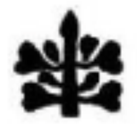
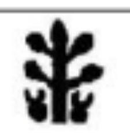
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 497 |  | Shape like the top part of a human figure with arms raised (needs verification, possibly dot in triangle) | **I** 264/3e |
| 526 |  | Wavy line with two dots in the arcs | **I/II** 279g |
| 527 |  | Square enclosing a solid oval with four legs | **I/II** 279h |
| 528 |  | Plant with five branches, the side branches with two leaf ends and the top with one | **VII** 592a |
| 529 |  | Three solid rectangles in a row with taurine centred above | **VIb** 567a |
| 530 |  | Standard-like shape with arc to left, supporting an outline square with two taurines tangent on top. This mark may need verification | **VIb** 572a |
| 531 |  | Triangle enclosing three outline circles | **I** 232b |
| 532 |  | Plant with five branches, the side branches with a leaf end and two buds, the top with leaf end only, taurine either side below the lower branches | **IVd** 461a |
| 533 |  | Rectangle enclosing elephant left with fish left above back | **VIb** 542a. See also 4th marks |
| 537 |  | Bull right, small star on back | **VIII** 604 |
| 539 |  | Bull right with standing rider who holds long stick in right hand | **VIII** 606, 607 |
| 578 |  | Rectangle enclosing two ovals and two fishes in quadrilateral formation | **III** 330a |
| 588 |  | Two solid dots joined by a downward-facing arc | **III** 334c |
| 603 | | Solid pot-like object with taurines coming out from the neck. Needs verification | **IVc** 397b |
| 604 |  | Plant with wide base and four branches, two have two buds, two have one bud, single stem at top. Needs verification | **IVc** 397c |
| 609 |  | Irregular triangular shape with two protrusions from two of the apexes | **IVd** 474a |
| 616 |  | Plant with six branches the bottom two with three leaves, the rest one leaf each, a triskeles in between each pair of branches and on top | **VIa** 539a |
| 617 |  | Dog-like animal walking right, backward-facing taurine above | **VIa** 539b |
| 618 |  | Plant with arrow-shaped bud at top, four branches each with a double leaf, a seed springs from each branch | **VIa** 539c |
| 619 |  | Plant with arrow-shaped bud at top, four bud-ended branches and a taurine either side of the lower trunk | **VIa** 539d |

Table 1 contd.

## Appendix 2 Table 2: Fourth marks by symbol order

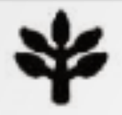
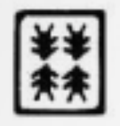
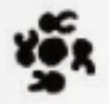
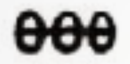
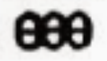
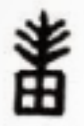
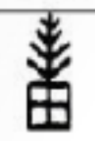
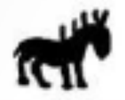
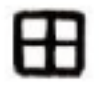
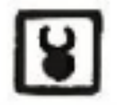
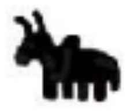
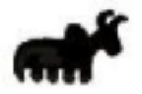
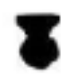
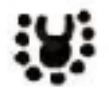
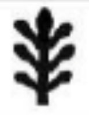
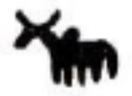
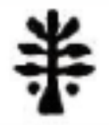
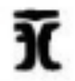
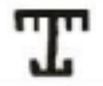
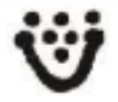
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 9 |  | Twig with five almond-shaped leaves | **IVd** 476d |
| 13 |  | Four fishes facing inwards in a box | **Va** 488, **VIa** 527, 533-539, **VII** 592.See also 5th marks |
| 14 |  | Four taurines round a central dot | **Va** 492-494, **Vb** 518-523. See also 5th marks |
| 15 |  or  | Three ovals in a row bisected by a central line, the ovals either tangent or separated | **Va** 505-509, **Vb** 510-517, **VIb** 540-541, 547-567, **VII** 589, 594, **VIII** 612-616, 637, 643. See also 5th & rev marks |
| 16 |  | Tree with six simple upward inclined branches upon four-square railing | **VIb** 576-582, **VII** 585, **VIII** 635, 639, 642. See also 5th marks |
| 16a |  | Tree with eight simple branches upon four-square railing ('Tree in railing') | **III** 332b |
| 19a |  | Horse with mane right | **I** 264/16a See also 3rd& 5th marks |
| 20 |  | A four-squared square | **0** 029, **VIa** 531-532.See also 3rd & 5th marks |
| 41 |  | Taurine in a box | **I** 78-81b. See also 5th marks |
| 46 |  | Bull left. | **I** 196-204, 257,**IVc** 385, 397a-b, **IVd** 438. See also 5th & 3rd marks |
| 58 |  | Bull right. | **I** 86-89e, 111c-112f, 160-164d, 175-182,264/16a.**II** 265, 267, 275a, **IVa** 354, **IVb** 359-365, 380-383, **IVc** 396-397, **IVd** 416-437, 442-447, 473, 476a-b, **Va** 497-500, **VIb** 544-546, **VIII** 620-621, 625, 634, 642, 645?, See also 5th and 3rd marks |
| 69 |  | Wide-topped pot | **I** 147. See also 5th marks |
| 70 |  | Taurine with dots on three sides | **I** 72-77c, **II** 270. See also 5th marks |
| 77 |  | A twig with a bud at the top of the stem and three upward-inclined branches ending in buds. | **I** 264a-e |
| 82 |  | Wide-horned bull left | **IVa** 342a,343 |
| 85 |  | Plant with triangular base, seven branches with single leaves and two dots under the lower leaves | **IVa** 339 |
| 101 |  | Two crescents back-to-back, horizontal pole above | **IVd** 474, 474a |
| 147 | | A solid dome shape | **I** 7b |
| 148 |  | Symbol like a rake | **I** 5 |
| 149 |  | Upward facing crescent with bossed ends with six dots above arranged 3-2-1 | **I** 6 |

Table 2

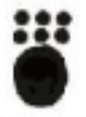
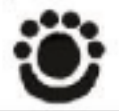
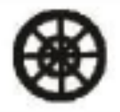
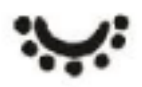
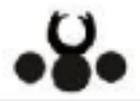
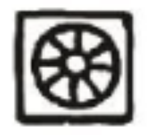
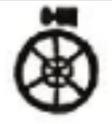
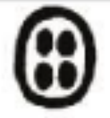
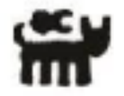
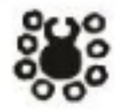
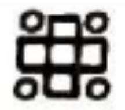
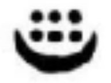
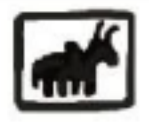
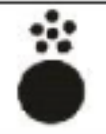
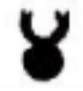
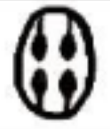
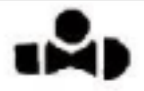
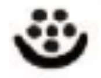
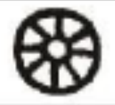
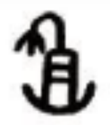
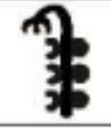
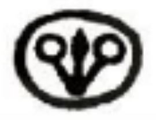
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 150 | | Lion cub (?) right | **I** 9, 10, 11, 12, 13, 14 |
| 151 |  | Large solid boss above which six dots arranged 3 above 3 | **I** 16-33 |
| 152 |  | Large solid dot, crescent below and ring of dots above | **I** 34-36, 124-134, 243-250 |
| 153 |  | Wheel with inner circle and eight spokes | **I** 37,38 |
| 154 |  | Upward-facing crescent with ring of dots below | **I** 39-46 |
| 155 |  | Large taurine with a solid dot either side | **I** 47 |
| 156 |  | Wheel with eight spokes and outline circle in centre, all in a box | **I** 48-59, 66 |
| 157 |  | Wheel with six spokes and an inner circle, small rectangle with handle above | **I** 60-65 |
| 158 |  | Oval enclosing four solid ovals | **I** 67-71 |
| 160 |  | Cat-like animal right, taurine above | **I** 82-85 |
| 162 |  | Taurine with outline circles on three sides | **I** 90-94 |
| 163 |  | Cruciform outline with central square and outline circles in the angles | **I** 96-100 . |
| 164 |  | Shallow upward-facing crescent with six dots above arranged 3:3 (similar to mark 191) | **I** 101a-e, 112g-112n |
| 165 |  | Bull right in a rectangle | **I** 102-115 |
| 166 |  | Large solid ball, above a ring of five dots around a central dot | **I** 116-118 |
| 167 |  | Taurine with bifurcated ends to horns | **I** 119-123. See also 5th and 3rd marks |
| 168 |  | Four bud-ended poles facing inwards all in an oval | **I** 135-143 |
| 169 |  | Dumbbell with solid rectangle to left, half circle to right and dot above | **I** 144-146 |
| 170 | | Shape like an hourglass | **I** 148-156 |
| 171 |  | Upward-facing crescent, above a ring of five dots round a central dot | **I** 157-159 |
| 172 |  | Wheel with eight spokes and outline circle at hub | **I** 165-174 |
| 173 |  | Crescent supporting inverted U-shape containing two horizontal lines, from the top a flower drooping left | **I** 183-187 |
| 174 |  | Vertical pole across which lie three taurines facing left, above a flower drooping left | **I** 188-195 |
| 176 |  | Oval enclosing vertical pole with leaf end; from the base two poles at 45° upwards ending in outline circles | **I** 205-212 |

Table 2 contd.

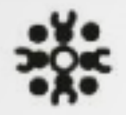
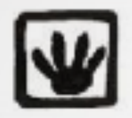
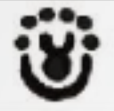
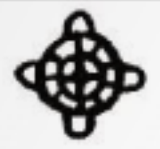
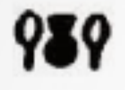
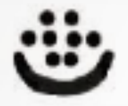
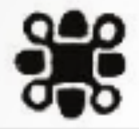
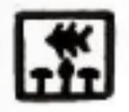
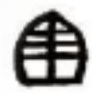
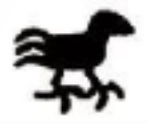
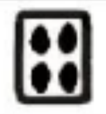
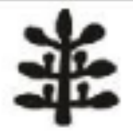
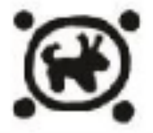
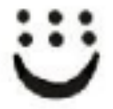
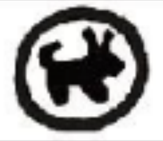
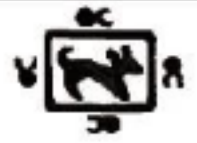
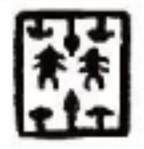
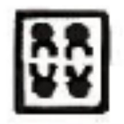
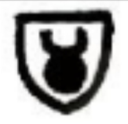
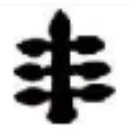
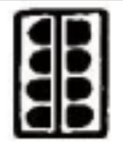
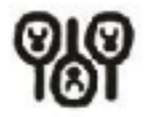
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 177 |  | Central outline circle from which four taurines extend in cruciform arrangement; dots in angles | **I** 213-216 |
| 179 |  | A hand with four fingers in a box | **I** 227-232 |
| 180 |  | Taurine with crescent below and ring of dots above | **I** 233-242 |
| 181 |  | Circle with eight spokes and an inner circle; outside four inward-facing arcs tangent to the circle and in cruciform arrangement | **I** 251-256 |
| 182 |  | Two poles supporting outline ovals either side of a pot | **I** 258-264 |
| 183 |  | Upward-facing crescent above which eight dots arranged 2-4-2 | **II** 266 |
| 184 |  | Solid square with poles ending in outline circles emanating from the corners; solid domes in angles | **II** 268 |
| 185 |  | Square enclosing a fish left below which a central pole with leaf end and either side two poles with oval tops | **II** 269 |
| 186 |  | Beehive shape enclosing one vertical and three horizontal lines | **II** 271 |
| 187 |  | Large bird right | **II** 272 |
| 188 |  | Four almond shaped dots in a box | **II** 273-274 |
| 189 |  | Plant with seven branches bearing a single leaf, with vertical buds from the four lower branches | **II** 275 |
| 190 |  | Pup right in a circle, four dots around | **II** 276-278 |
| 191 |  | Upward facing crescent with six dots above arranged 3-3. (Similar to mark 164) | **I** 7, **I/II** 279-279h |
| 192 |  | Pup right in a circle | **II** 280-282, IVb 366 |
| 193 |  | Pup right in a rectangle, four taurines around | **II** 283 |
| 194 |  | Rectangle enclosing two fishes , two bud-ended poles and four poles with oval caps | **II** 284, **IVc** 389 |
| 195 |  | Four taurines facing inward in a box | **II** 285 |
| 196 |  | Taurine in shield | **II** 286 |
| 197 |  | Plant with sturdy stem and bulbous base, seven branches ending in single leaves | **II** 286a, 287 |
| 198 |  | Outline rectangle bisected longways with four solid domes on either side | **II** 288-290 |
| 199 |  | Three posts arranged two facing up and one in the middle down ending in outline ovals enclosing taurines | **III** 291-294 |

Table 2 contd.

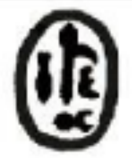
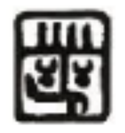
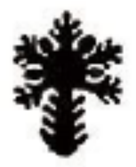
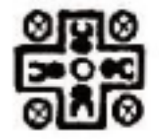
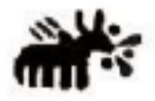
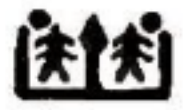
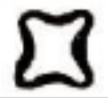
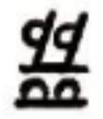
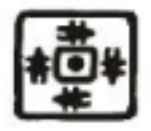
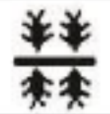
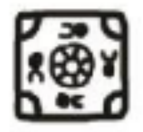
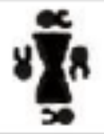
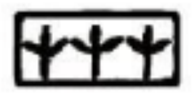
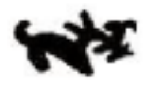
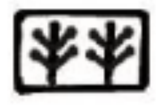
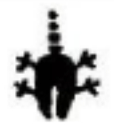
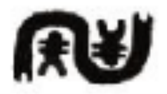
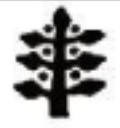
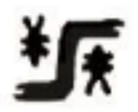
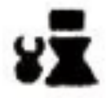
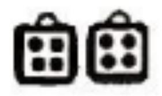
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 200 |  | Elephant goad, spear, taurine and e-shaped object all in an oval | **III** 295-301 |
| 201 |  | Rectangle enclosing rake-like object bisected at the bottom by an uneven wavy line, taurines either side | **III** 302-304 |
| 202 |  | Coconut palm with five branches and coconuts in the angles | **III** 305-312 |
| 203 |  | Cruciform outline enclosing central circle and outward facing taurines in the quarters; in each angle an outline circle enclosing saltire cross with central pellet | **III** 313 |
| 204 |  | Snorting bull right, three oblique lines above back | **III** 314. 314a |
| 205 |  | Three sides of a rectangle from the base of which rises a pole with bud end, a fish either side and two dots above | **III** 315 |
| 206 |  | Outline square with sides curved inward | **III** 316 |
| 207 |  | Two parallel lines enclosing downward-facing crescents attached to the base, from the top line two right-slanting poles with crescents attached | **III** 317-318 |
| 208 |  | Box (tank?) enclosing central dot encased by a small square, between the two squares four beetles swimming clockwise | **III** 319-330 |
| 209 |  | Four fishes, two above and two below a central line | **III** 331 |
| 210 |  | Box encasing small arcs at each corner. In the centre a wheel with outline circle in hub; four taurines anti-clockwise around | **III** 332, **IVb** 355-358 |
| 211 |  | Dumbbell-like shape with four taurines clockwise around | **III** 333 |
| 212 |  | Rectangle enclosing three plants each with three simple upward-inclined branches | **III** 334 |
| 213 |  | Dog right with pup in mouth facing inwards | **IVa** 335-337 |
| 214 |  | Rectangle enclosing two plants each with five upward-inclined branches ending in buds | **IVa** 338 |
| 216 |  | Insect (scorpion?) from above | **IVa** 340-342 |
| 217 |  | Wavy line (river?) with two inward-facing fishes in the angles | **IVa** 344-345 |
| 218 |  | Plant with seven branches bearing single leaves, with dots between the branches | **IVa** 346-348, **IVd** 406-408 |
| 219 |  | Staggered line (river?) with two inward-facing fishes | **IVa** 349 |
| 220 |  | Dumbbell with small solid rectangle above and taurine to the left | **IVa** 350-351 |
| 221 |  | Two boxes, each with four dots inside, with handles at top | **IVa** 352-353 |

Table 2 contd.

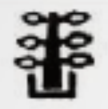
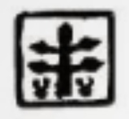
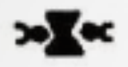
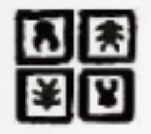
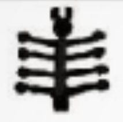
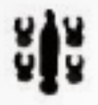
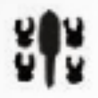
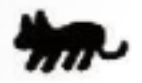
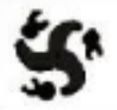
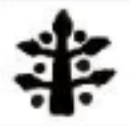
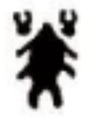
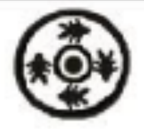
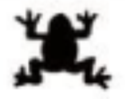
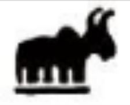
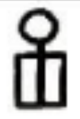
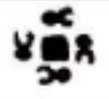
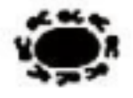
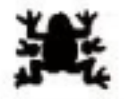
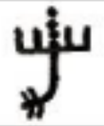
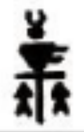
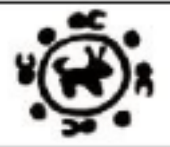
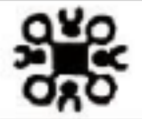
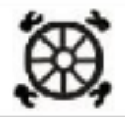
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 222 |  | Plant in a tub with thick stem and six branches each with one outline leaf | **IVb** 367 |
| 223 |  | Box enclosing a plant with five bud-ended branches and a taurine either side at the bottom | **IVb** 368 |
| 224 |  | Dumbbell with outward-facing taurines at each end | **IVb** 369 |
| 225 |  | Four boxes two enclosing taurines and two enclosing fishes | **IVb** 370 |
| 226 |  | Plant with eight extended branches each ending in a bud, taurine on top | **IVb** 371 |
| 227 |  | Bulbous vertical pole narrowing at top with two taurines on each side | **IVb** 372 |
| 227a |  | Vertical pole supporting elongated bud, two taurines each side | **IVd** 476c |
| 228 |  | Cat-like animal with long tail and prominent ears left (leopard?) | **IVb** 373 |
| 229 |  | Triskeles with three taurines clockwise around | **IVb** 374 |
| 230 |  | Plant with five branches bearing single leaves, six dots between and below the branches | **IVb** 375 |
| 231 |  | Fish with taurine either side of head | **IVb** 376 |
| 232 |  | Four fishes swimming clockwise in a circular tank with dot within circle in the centre | **IVb** 377 |
| 233 |  | Frog jumping | **IVb** 378, **IVd** 398-403 |
| 234 |  | Bull right, ground line below | **IVb** 379-379a |
| 235 | | Solid square surrounded by four taurines clockwise and saltire crosses at the box corners | **IVc** 384 |
| 236 |  | Rectangle bisected long ways and supporting a circle on a short pole | **IVc** 386-388 |
| 237 |  | Solid square surrounded by four taurines clockwise | **IVc** 390-394 |
| 238 |  | Solid oval surrounded by eight taurines clockwise | **IVc** 395 |
| 239 |  | Frog jumping, taurines at each side | **IVd** 404 |
| 240 |  | Rake-like object with three dots above and long tail turning to the left below | **IVd** 405 |
| 241 |  | Triangle-headed standard facing to the right, taurine above and a small fish at either side | **IVd** 409 |
| 242 |  | Pup right in circle, alternating dots and taurines clockwise around | **IVd** 410-415 |
| 243 |  | Solid square with circles at apexes and outward-facing taurines between the circles | **IVd** 439-441 |
| 244 |  | Eight-spoked wheel with outline circle at hub, four taurines clockwise around | **IVd** 448 |

Table 2 contd.

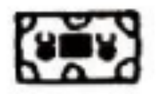
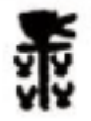
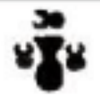
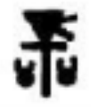
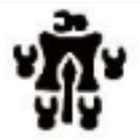
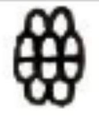
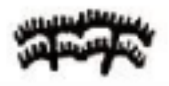
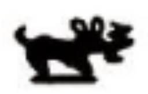
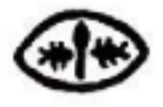
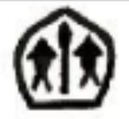
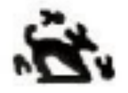
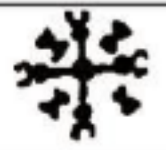
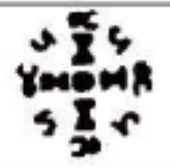
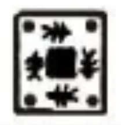
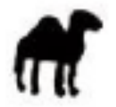
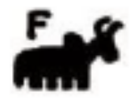
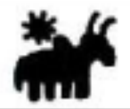
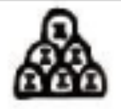
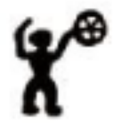
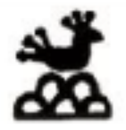
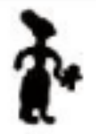
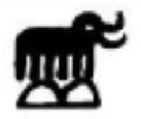
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 245 |  | Rectangle encasing small arcs at each corner and half way along the long edges, and enclosing a solid box with a taurine either side | **IVd** 449 |
| 246 |  | Triangle-headed standard facing right, two taurines below on each side | **IVd** 450-461, 464-466 |
| 247 |  | Pot with taurines above and at either side | **IVd** 462 |
| 248 |  | Triangle–headed standard facing right, taurine on either side | **IVd** 463 |
| 249 |  | Vertical spear encased in upper part by solid shape with inward-curving sides each harbouring a taurine; a taurine also either side of spear shaft | **IVd** 467-471 |
| 250 |  | Three conjoined ovals bisected by a straight line, two arcs tangent on either side | **IVd** 472 |
| 252 |  | Two thorn hedge plants each with two branches | **IVd** 475-476, **VIII** 603 |
| 253 |  | Dog with pup in mouth facing outward, ground below | **Va** 477-484, **VIb** 542-543, **VII** 584, 595, **VIII** 597, 598, 635, 636 |
| 254 |  | Lozenge shape enclosing vertical spear with a taurine either side | **Va** 485-486 |
| 255 |  | Beehive shape enclosing vertical pole with a fish either side | **Va** 487 |
| 257 |  | Dog right with ground below and three taurines around | **Va** 489 |
| 258 |  | Cross with central pellet, taurines facing outwards on cross ends and dumbbells in the angles | **Va** 490 |
| 259 |  | Cross formed from central pellet and four dumbbells, at their apexes four taurines clockwise, shapes like a letter u in the angles | **Va** 491 |
| 260 |  | Box enclosing solid square around which four fishes clockwise, pellets in corners | **Va** 495 |
| 261 |  | Camel right | **Va** 496 |
| 262 |  | Bull right with letter F above | **Va** 499 |
| 262a |  | As 262 but sun symbol with no central dot above bull | **Va** 497 |
| 263 |  | Pyramid of six tangent arches each enclosing a dumbbell | **Va** 501-503 |
| 264 |  | Human figure standing facing holding wheel (missile discus?) high in left hand and stick held high in right. Same as mark 362. | **Va** 504 same as mark 362 |
| 265 |  | Peacock on pyramid of five tangent arches | **Vb** 524-525, **VIb** 568-570, **VII** 590-591, 593, **VIII** 644. See also rev marks |
| 266 |  | Female human figure right holding baby to right | **Vb** 526 |
| 267 |  | Elephant right on two arches with linear base | **Vb** 528 |

Table 2 contd.

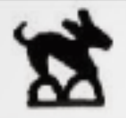
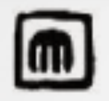
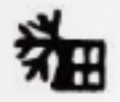
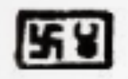
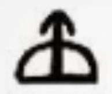
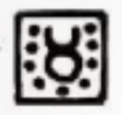
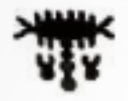
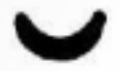
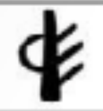
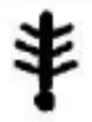
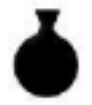
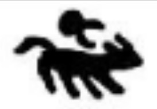
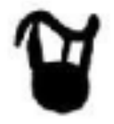
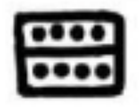
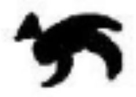
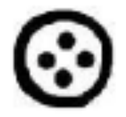
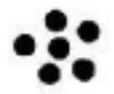
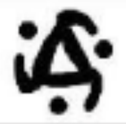
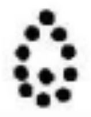
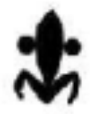
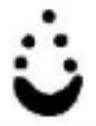
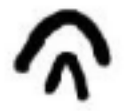
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 268 |  | Dog right on two arches with ground line | **VIa** 529-530. See also 3rd marks |
| 269 |  | Box enclosing shape like four fingers of a hand | **VIb** 571-572, **VII** 587-588. **VIII** 624 |
| 270 |  | Quartered square with left side thicker; from top left corner springs a plant with three branches, each branch has three simple twigs | **VIb** 573-575, **VII** 586, 596, **VIII** 599-601 |
| 271 |  | Rectangle enclosing swastika and taurine | **VIII** 611 |
| 283 |  | Bow and arrow | **I** 3, 4, 36f-h. See also 3rd marks |
| 295 |  | Square enclosing taurine with outline centre surrounded on three sides by an arc of dots | **I** 219-226 |
| 317 |  | Centipede-like insect supported by a vertical pole with three bosses, a taurine either side | **IVd** 463a. See also 3rd marks |
| 483 |  | Large upward-facing crescent | **0** 010 |
| 485 |  | A symbol like a feather with a handle on the left | **I** 7c |
| 490 |  | Plant with six upward- inclined branches on a stem with a dot at the base | **I** 65L |
| 491 |  | A pot with a narrow neck | **I** 89L |
| 495 |  | Dog right, taurine above | **I** 143a |
| 501 | | Two solid ovals joined together, smaller on top | **0** 09, 21, 26 |
| 503 |  | Solid oval shape connected to a wavy line above by three unevenly spaced lines | **0** 011 |
| 505 |  | Rectangle divided long ways with four dots in each compartment | **0** 012 |
| 507 |  | Uncertain object possibly a running bird; form varies, see enlarged photo section | **0** 013 |
| 509 |  | Four dots in a circle | **0** 014 |
| 511 | | As 501 but small downward-facing crescent above | **0** 015 |
| 512 |  | Central dot with five dots around | **0** 016 |
| 514 |  | Outline triangle with clockwise arcs on apexes and three dots outside | **0** 017 |
| 515 |  | Dots arranged in leaf shape with one dot inside. Dot arrangement varies. See also third marks | **0** 018 |
| 518 |  | Frog | **0** 020 |
| 521 |  | Upward-facing crescent above which five dots in pyramid arrangement | **0** 022 |
| 523 |  | Two arcs one contained within the other. This mark is probably incomplete | **0** 024 |

Table 2 contd.

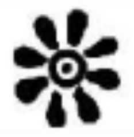
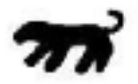
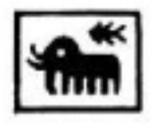
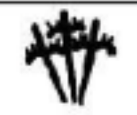
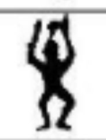
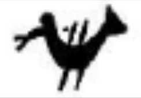
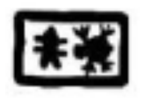
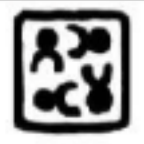
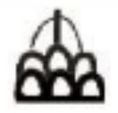
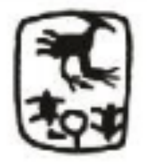
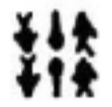
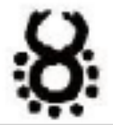
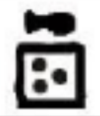
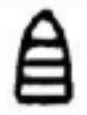
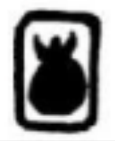
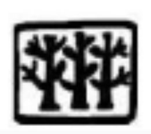
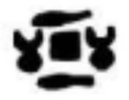
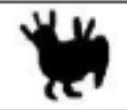
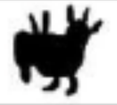
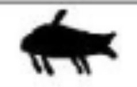
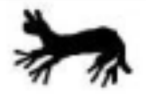
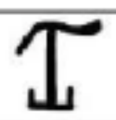
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 524 |  | Flower petal with eight petals and a central outline circle enclosing a dot | **0** 025 |
| 525 |  | Animal with no ears (lion cub?) left | **0** 027 |
| 533 |  | Rectangle enclosing elephant left with fish left above back | **Va** 496a |
| 535 |  | Three cactus-like branches interlocking and arranged in a sprig | **VIII** 602 |
| 538 |  | Human figure standing facing with hair in bun above head, holding club and (?) knife above head | **VIII** 604-607 |
| 553 |  | Bird left with beaked head and triangular tail | **I** 264/7d |
| 568 |  | Rectangle enclosing fish and tortoise | **Vb** 526a |
| 575 |  | Square enclosing four taurines in anticlockwise rotation | **II** 290a |
| 580 |  | Base on which six arches arranged 3-3 supporting a vertical pole with hanging buttresses either side | **III** 332a |
| 582 |  | Rectangle enclosing right-facing bird above vertical post supporting open circle, fish to left and right, one upwards one downwards (?) | **III** 334a |
| 587 |  | Two vertical poles with bud ends head-to-head, two fishes either side, one pair upwards and one downwards | **III** 334c |
| 592 |  | Open taurine with bifurcated ends to horns and arc of dots round lower part | **I** 264/1 a-j |
| 595 |  | Square enclosing three dots, slender pot-like object sideways above | **I** 264/3 a-e |
| 597 |  | Beehive shape enclosing three parallel horizontal lines | **I** 264/4 a-e |
| 601 |  | Rectangle enclosing large taurine with pointed head | **0** 028 |
| 602 |  | Rectangle enclosing three interlocking trees with multiple branches and wide bases | **IVb** 366a |
| 608 |  | Solid square with taurine on either side and knife-like objects above and below | **IVc** 397c |
| 626 |  | Bird right head lowered pecking | **I** 264/14a, 264/15a |
| 626a |  | As 626 but left | **I** 264/7c |
| 631 |  | Fish (shark?) left with one fin above and four below | **I** 264/11a |
| 633 |  | Tiger left with large claws | **I** 264/12a |
| 637 |  | Plough(?) | **I** 264/13a |

Table 2 contd.

## Appendix 2 Table 3: Third marks by symbol order

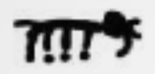
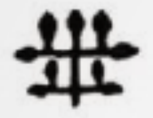
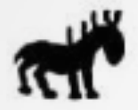
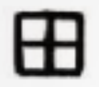
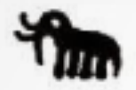
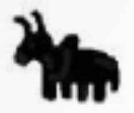
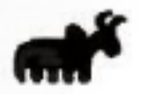
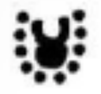
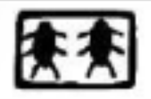
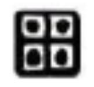
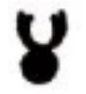
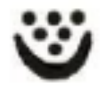
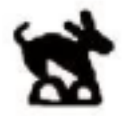
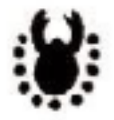
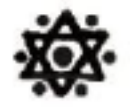
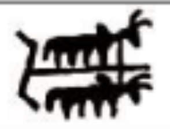
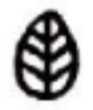
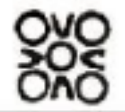
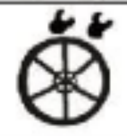
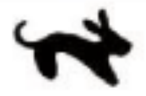
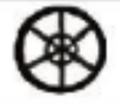
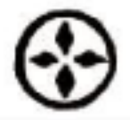
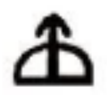
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 1 |  | Elephant right (early style) | **0** 07 See also 5th marks |
| 5 |  | Candelabrum | **VIII** 604-607. See also 5th marks |
| 19a |  | Donkey or horse with mane right. Minor variants occur | **Va** 489-491. See also 5th marks |
| 20 |  | Four-squared square | **I** 37-38a, 258-264. See also 4th & 5th marks |
| 36 |  | Elephant left | **I** 1-7c. See also 5th marks |
| 46 |  | Bull left | **0** 016, 027, **I** 8a,16-17a, **IVb** 376-378. See also 5th & 4th marks |
| 57 | | Fish | **II** 283, 283a, **IVb** 374, 374a |
| 58 |  | Bull right | **I** 8. See also 5th and 4th marks |
| 70 |  | Taurine with dots round the sides and bottom | **I** 86-89k. See also 4th & 5th marks |
| 83a |  | Two fishes side by side in a rectangle, fins not touching | **I** 264/5a |
| 95 |  | Square divided into four with a dot in each sector | **0** 024, 025, **I** 39-65. See also 5th mks |
| 167 |  | Taurine with bifurcated ends to horns | **I** 18, 96-101. See also 5th & 4th marks |
| 178 |  | Shallow upward-facing crescent above which six dots arranged 3-2-1 | **I** 94a-95r, 219-226 |
| 268 |  | Dog on two arches with ground line | **IVd** 474. See also 4th marks |
| 272 |  | Taurine with bifurcated ends to horns, pointed head and arc of dots on three sides | **I** 9-14 |
| 273 |  | Six-pointed star made of two outline triangles, central pellet and six dots in the angles outside | **I** 19-36, 90-94, 213-218 |
| 275 |  | Two bulls one above the other yoked to a plough | **I** 66 |
| 276 |  | Leaf with veins without stem | **I** 67-77 |
| 277 |  | Outline circle surrounded by four outline circles alternating with inward-facing V-shapes | **I** 78-81 |
| 278 |  | Six-spoked wheel with central outline circle at hub and two taurines placed obliquely outside | **I** 82-85 |
| 280 |  | Dog right | **I** 102-111b, **II** 273-275, **IVb** 359-366 |
| 281 |  | Six-spoked wheel with central outline circle at hub | **I** 111c-112n |
| 282 |  | Circle enclosing four diamond shapes arranged in a cross | **I** 113-115d |
| 283 |  | Bow bisected by upward-facing arrow | **I** 116-134d, **II** 285. See also 4th marks |

Table 3

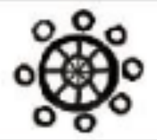
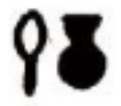
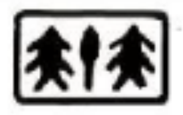
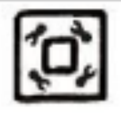
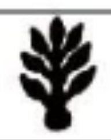
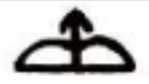
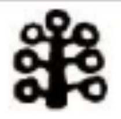
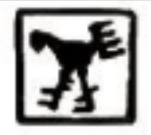
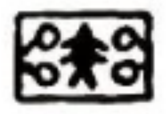
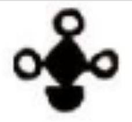
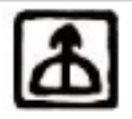
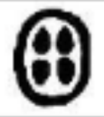
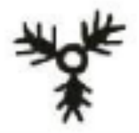
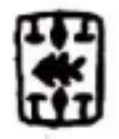
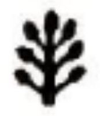
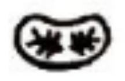
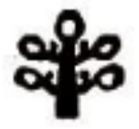
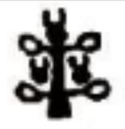
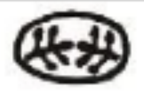
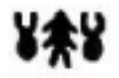
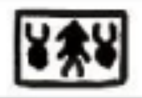
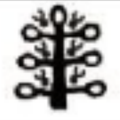
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 284 |  | Eight-spoked wheel with central outline circle at hub, eight outline circles around | **I** 135-143 |
| 285 |  | Vertical pole supporting outline bud shape, solid pot to right | **I** 144-147 |
| 286 |  | Rectangle enclosing bud on pole with a fish either side | **I** 148-156, **II** 272 |
| 287 |  | Square enclosing smaller outline square around which four taurines placed diagonally in the corners | **I** 157-159 |
| 288 |  | Plant with bulbous base and seven upward- inclined leaf-ended branches | **I** 160-164 |
| 289 |  | As 283 but the bow is flatter | **I** 165-174 |
| 290 |  | Plant with expanding stem and seven branches with outline circle ends | **I** 175-182 |
| 291 |  | Rectangle enclosing bird walking right with tail feathers and clawed feet | **I** 183-187 |
| 292 |  | Rectangle enclosing fish and from each short side two poles ending in outline circles | **I** 188-195 |
| 293 |  | Central solid square, on apexes three outline circles and a solid half circle | **I** 196-204 |
| 294 |  | Square enclosing bow bisected by upward-facing arrow | **I** 205-212 |
| 296 |  | Oval enclosing four solid almond-shapes facing outward | **I** 219-226 |
| 297 |  | Outline circle towards which swim three fishes radially | **I** 233-242, **III** 291-294, **IVb** 368 |
| 298 |  | Rectangle enclosing left-facing fish, above and below tangent to the rectangle edges a vertical bud with mushroom shapes on either side | **I** 243-250 |
| 299 | | Tortoise without toes | **I** 251-257 |
| 300 |  | Plant with seven upward inclined bud-ended branches | **II** 265-266 |
| 301 |  | Sausage-shaped oval enclosing two fishes facing each other | **II** 267 |
| 302 |  | Plant with five stems ending in outline ovals, small buds rising from the two lower stems | **II** 268-269 |
| 303 |  | Plant with four stems each ending in outline ovals, taurines between the stems and on top | **II** 270 |
| 304 |  | Oval enclosing two twigs each with five bud-ended stems | **II** 271 |
| 305 |  | Fish between two taurines | **II** 276-278 |
| 306 |  | Rectangle enclosing fish between two taurines | **II** 279 |
| 307 | | Beetle with three-toed legs between two fishes | **II** 280-282 |
| 308 |  | Plant with seven stems ending in outline buds; a taurine in between each bud | **II** 284 |

Table 3 contd.

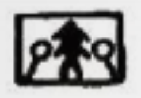
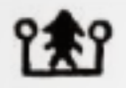
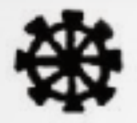
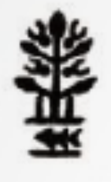
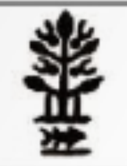
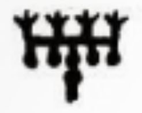
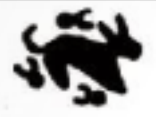
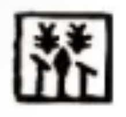
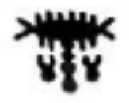
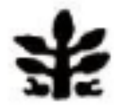
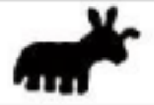
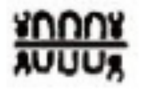
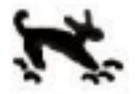
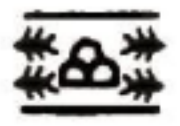
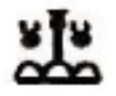
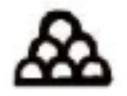
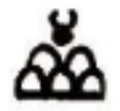
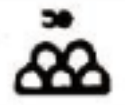
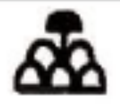
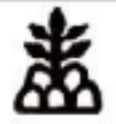
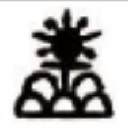
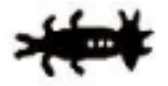
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 309 |  | Rectangle enclosing fish and from the lower corners two upward inclined poles with outline circle caps | **II** 286 |
| 310 |  | Flat base with two poles with outline circle caps rising from each end, fish between them | **II** 287 |
| 311 |  | Eight-spoked waterwheel, cups adjoining the spokes | **II** 288-290 |
| 312 |  | Fish left between two horizontal lines supporting a plant with five upward-inclined bud-ended branches, the bottom two supported by poles, taurines between the side branches | **III** 295-300a |
| 313 |  | As 312 but fish right | **III** 301 |
| 314 |  | Candelabrum with four lamps on a vertical ornamented stick | **III** 302-304 |
| 315 |  | Dog right with three taurines clockwise around | **III** 305-312 |
| 316 |  | Box enclosing two downward-facing fishes below which a bud-ended pole rises from the base, on either side a pole capped by a diagonal line | **III** 313 |
| 317 |  | Centipede-like insect supported by a vertical pole with three bosses, a taurine either side | **III** 314. See also 4th marks |
| 318 |  | Plant with five bud-ended stems and taurines either side below the bottom stems | **III** 315 |
| 319 | | Frog from above | **III** 317-318 |
| 320 |  | Rhinoceros right | **III** 319-332 |
| 321 |  | Horizontal line bisecting two sets of inward-facing arches, at either end outward-facing taurines | **III** 333 |
| 322 |  | Dog right with five small cusps at feet | **III** 334 |
| 323 |  | Base on which three arches in pyramid form, on either side two outward-facing fishes, all between two horizontal lines | **IVa** 335-338 |
| 324 |  | Three arches in a row on a base from which rises a pole surmounted by a dot and platform, taurine either side | **IVa** 339 |
| 325 |  | Base on which six arches in pyramid form | **IVa** 340-345, **IVc** 385-389, **VIa** 527, **VII** 593-596, **VIII** 645 |
| 326 |  | Base on which five arches arranged 2-3; on top an upward-facing taurine | **IVa** 346-348 |
| 327 |  | As 326 but the taurine to the left | **IVa** 349 |
| 328 |  | As 326 but a mushroom shape at the top | **IVa** 350-351 |
| 329 |  | As 326 but a plant with five leaf-ended branches at the top | **IVa** 352-353, **IVd** 442-448 |
| 330 |  | As 326 but a plant with a coconut palm at the top | **IVa** 354 |
| 331 |  | Crocodile right with fish in mouth | **IVa** 355-358 |

Table 3 contd.

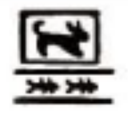
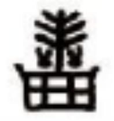
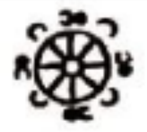
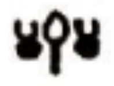
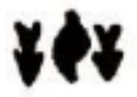
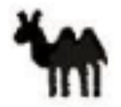
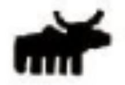
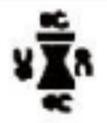
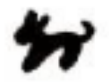
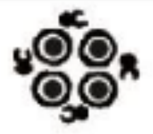
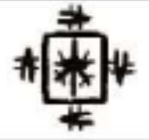
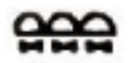
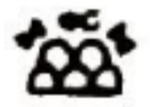
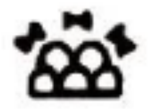
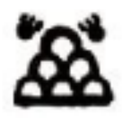
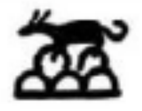
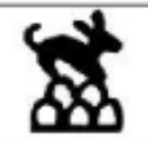
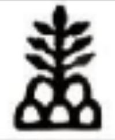
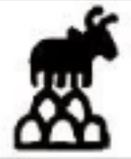
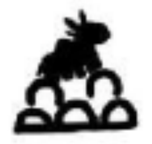
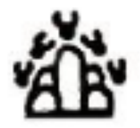
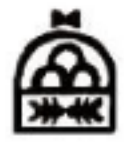
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 332 |  | Rectangle enclosing dog right, below two horizontal lines with two right-facing fishes between | **IVa** 367 |
| 333 |  | Six-square rectangle, above a plant with seven plain branches and a taurine at each side ('Tree in railing') | **IVb** 369 |
| 334 |  | Eight-spoked wheel with outline circle at hub, four taurines and four arcs alternating anti-clockwise around | **IVb** 370 |
| 335 |  | Vertical post with outline bud at top, taurine at each side | **IVb** 371 |
| 336 |  | Conch shell with single-finned fish at either side | **IVb** 372 |
| 337 |  | Camel left | **IVb** 373 |
| 338 |  | Buffalo right | **IVb** 375 |
| 339 |  | Dumbbell with horizontal line above, four taurines around | **IVb** 379 |
| 340 |  | Dog left | **IVb** 380 |
| 341 |  | Four outline circles arranged in square formation, each enclosing a dot; four clockwise taurines around | **IVb** 381-382 |
| 342 |  | Box enclosing stick insect, two-toed at front and three-toed at back; around four water-beetle type insects | **IVb** 383 |
| 343 |  | Three arches in a row on a single base, three dumbbells in a row below | **IVc** 384 |
| 344 |  | Base on which five arches arranged 2-3, taurine right above with dumbbell at each side | **IVc** 390-394 |
| 345 |  | As 344 but dumbbell in place of taurine | **IVc** 395 |
| 346 |  | Base on which six arches in pyramid form, three-pronged taurines on either side | **IVc** 396 |
| 347 |  | Base on which five arches arranged 2-3, upon which slender dog left | **IVc** 397, 397a, 397b |
| 348 |  | As 347 but dog right | **IVd** 398-441 |
| 349 |  | As 347 but plant with seven leaf-ended branches on top | **IVd** 449 |
| 350 |  | As 347 but bull on top | **IVd** 450-463 |
| 350a |  | As 350 but the bull is upward inclined and its horns straight with trace of ears | **IVb** 379b |
| 351 |  | Five arches on base, the central arch tall; taurine above and two taurines on each side | **IVd** 464-466 |
| 352 |  | Rectangle enclosing two fishes facing each other, above and tangent a large outline arch enclosing a three-arched hill, above outside a dumbbell sideways | **IVd** 467-471 |

Table 3 contd.

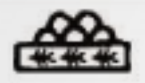
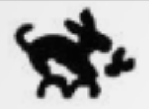
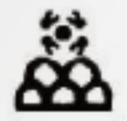
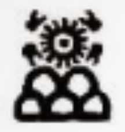
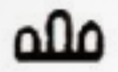
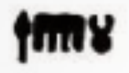
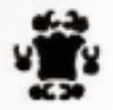
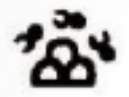
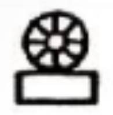
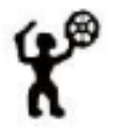
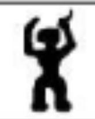
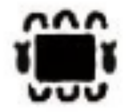
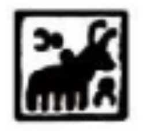
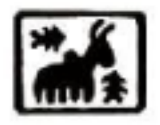
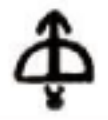
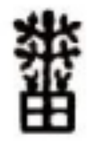
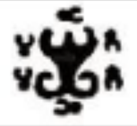
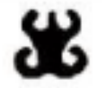
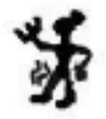
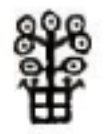
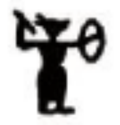
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 353 |  | Rectangle enclosing three fishes left, above and tangent five arches arranged 2-3 | **IVd** 472 |
| 354 |  | Dog on two arches with no ground line and taurine to right | **IVd** 473 |
| 355 |  | Base on which five arches arranged 2-3, above a dot surrounded by four taurines two upward and two downward | **IVd** 475 |
| 356 |  | As 355 but sun in place of dot above arches | **IVd** 476, **VIII** 603 |
| 357 |  | Three arches detached from one another on a base line, the central arch taller | **Va** 477-484, **VIII** 641, 642 |
| 358 |  | Four-legged table, spear to left and taurine to right | **Va** 485-487 |
| 359 |  | Solid shape like a casket, two taurines facing each other at top and bottom and an upward-facing taurine at each side | **Va** 488 |
| 360 |  | Three-arched hill with three taurines facing left above | **Va** 492-494 |
| 361 |  | Outline rectangle supporting an eight-spoked wheel with outline circular hub | **Va** 495 |
| 362 |  | Human figure standing facing holding wheel (missile discus?) high in left hand and stick held high in right | **Va** 496 (same as mark 264) |
| 363 |  | As 362 but sickle-like object in left hand | **Va** 498-499 |
| 364 |  | Solid rectangle, above and below three detached arches and a finless fish at either side | **Va** 500 |
| 365 |  | Box enclosing bull right with taurine left above back and taurine downwards below head | **Va** 501-503 |
| 366 |  | As 365 but fish right above back and fish upwards below head | **Va** 504-505, **Vb** 516-519 |
| 367 |  | Bow bisected by arrow with taurine below | **Va** 506 |
| 368 |  | Four-square box supporting plant with five branches, the top branch with one bud and the side branches with three buds each, two taurines either side of the stem tangent to the top of the box | **Va** 507-509, **Vb** 510-515, **VIII** 643 |
| 369 |  | Srivasta symbol with six taurines clockwise around | **Vb** 520 |
| 370 |  | Srivasta symbol | **Vb** 521-522 |
| 371 |  | Human figure standing left holding trident up in right hand and pot down in left, two zigzags to left | **Vb** 523 |
| 372 |  | Box ('Tree in railing') with handles and bosses supporting plant with five branches, the top branch with one outline oval leaf containing a dot, the side branches with two similar | **Vb** 524-525 |
| 373 |  | Female human figure wearing skirt standing facing with stick raised in right hand and shield in left | **Vb** 526 |

Table 3 contd.

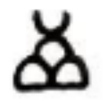
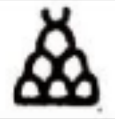
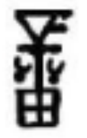
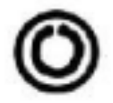
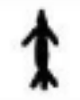
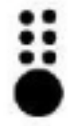
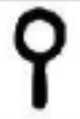
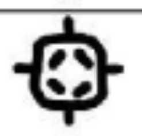
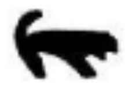
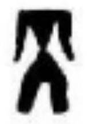
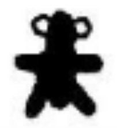
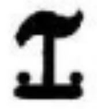
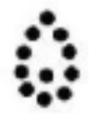
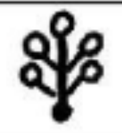
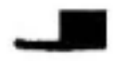
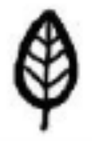
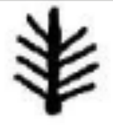
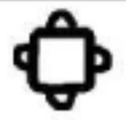
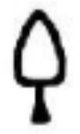
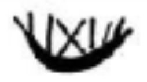
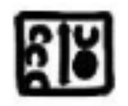
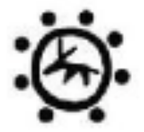
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 374 |  | Triple-arched hill with upward facing arc tangent above | **VIa** 528-539, **VIb** 542-582, **VIII** 597-601, 613-617, 624, 625, 638, 643. See also rev. marks |
| 375 |  | Base on which six arches in pyramid form with upward-facing arc tangent above | **VIa** 527, **VIb** 540-541 |
| 376 |  | Four-squared box supporting open standard, oblique right-facing taurines either side above box | **VIII** 612 |
| 498 |  | Circle enclosing shape like a torque | **0** 06 |
| 499 |  | Narrow fish with tail fins and tail | **0** 08 |
| 500 |  | Large solid dot with eight small dots arranged 2-2-2-2 above | **0** 09 |
| 502 |  | Vertical pole supporting outline circle | **0** 010 |
| 504 |  | Box enclosing four bars placed diagonally at the corners; outside four bars protruding outwards from the box sides | **0** 012 |
| 506 |  | Cat-like animal right | **0** 013 |
| 508 |  | Headless man facing (?) | **0** 014 |
| 510 |  | Four-legged animal from above with prominent ears | **0** 015 See also 4th marks |
| 513 |  | Vertical pole on a ground line, supporting a wavy line. Small pellets or uprights at each end of the ground line | **0** 017, 029 |
| 515 |  | Dots arranged in leaf shape with one dot inside. Dot arrangement varies. | **0** 018 See also 3rd marks |
| 516 |  | Plant with bulbous base and five upward- inclined branches, each branch ending with an outline bud | **0** 019 |
| 517 |  | Flat bar on the right end of which a solid rectangle | **0** 020 |
| 519 |  | Leaf with veins on short stem | **0** 021 |
| 520 |  | Twig with eight plain upward- inclined side branches and slightly bulbous base | **0** 022 |
| 522 |  | Outline box with handles on all four sides | **0** 023, 026 |
| 534 |  | Vertical pole supporting outline spade shape | **0** 011, **III** 316 |
| 552 |  | Light sailing ship left with figurehead on prow, two main masts with sail, and mizzen mast | **I** 264/7a-d |
| 569 |  | Square enclosing central spear with three inverted cusps to the left and a taurine (?) to the right | **Vb** 526a |
| 573 |  | Dog-like animal left within circle, eight dots around | **II** 290a |

Table 3 contd.

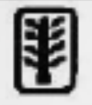
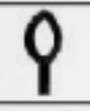
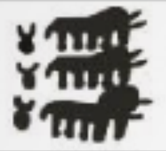
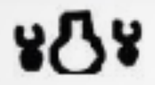
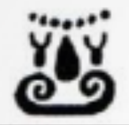
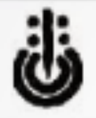
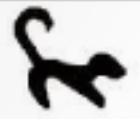
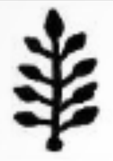
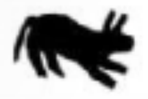
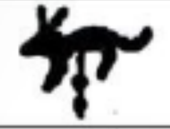
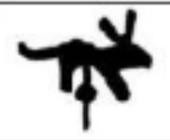
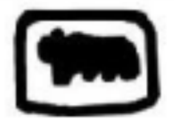
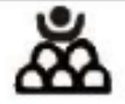
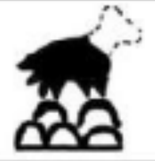
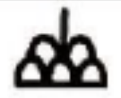
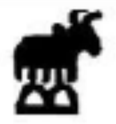
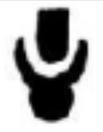
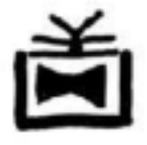
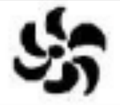
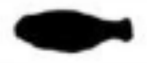
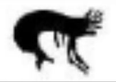
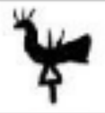
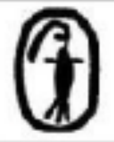
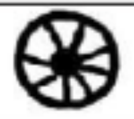
| No | Mark | Description | Occurrence |
|---|---|---|---|
| 574 |  | Rectangle enclosing plant with four straight upward-inclined branches. Needs verification | **II** 283a |
| 577 |  | Vertical pole supporting open lozenge shape | **III** 316 |
| 581 |  | Three right-facing elephants one above the other, taurine behind each | **III** 334a |
| 583 |  | Outline pot with narrow neck, taurine on each side | **III** 334b |
| 586 |  | Arc of dots below which solid tear-shape with taurines on either side; scroll-like object below | **III** 334c |
| 591 |  | Two concentric arcs with vertical pole above and two dots either side | **I** 264/1 a-j |
| 593 |  | Animal with long tail right (monkey) | **I** 264/2 a-e |
| 594 |  | Plant with nine branches ending in pointed leaves | **I** 264/3 a-e |
| 596 |  | Crouching cat-like animal right | **I** 264/4 a-c |
| 598 |  | Vertical pole with two bosses supporting dog left | **I** 264/6a |
| 599 |  | Vertical pole with one boss supporting dog right | **I** 264/6b |
| 600 |  | Rectangle enclosing ?animal left | **0** 028 |
| 606 |  | Base on which five arches arranged 2 on 3, upward-facing arc housing dot above | **IVc** 396a, **IVd** 476b |
| 610 |  | Five arches arranged 2 on 3 upon which uncertain animal right | **IVd** 474a |
| 612 |  | Five arches arranged 2 on 3 , tangent vertical pole above | **IVd** 476a |
| 613 |  | Base of two arches upon which bull right | **IVd** 463a |
| 614 |  | Taurine-like object with broad vertical bar above (incomplete?) | **IVd** 476c |
| 615 |  | Three-sided (?) box enclosing dumbbell above which plant-like object with ground line and four straight branches (?) | **IVd** 476d |
| 627 |  | Six solid arcs rotating clockwise round a central pellet | **I** 264/14a |
| 628 |  | Fish-like object with no fins | **I** 264/10a |
| 629 |  | Prawn or lobster right | **I** 264/11a |
| 631 |  | Peacock left on small stand | **I** 264/12a |
| 634 |  | Fish hanging from fishhook all within oval outline | **I** 264/8a |
| 635 |  | Eight spoked wheel with solid boss | **I** 264/13a |

Table 3 contd.

## Appendix 2 Table 4a: Six-armed symbols and miscellaneous marks by symbol order

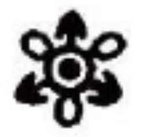
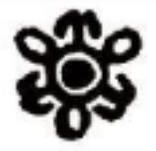
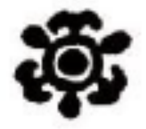
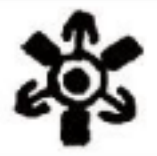
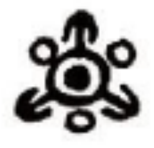
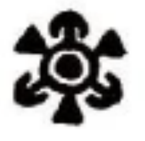
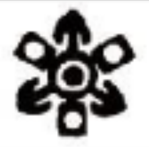
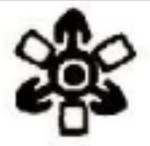
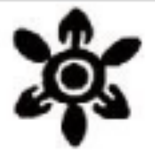
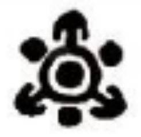
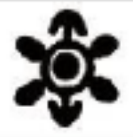
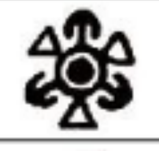
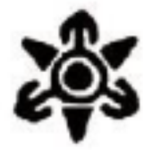
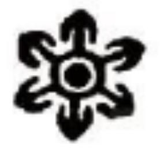
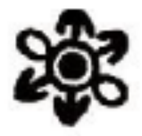
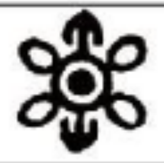
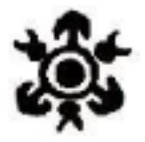
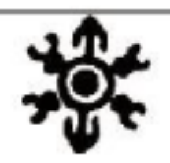
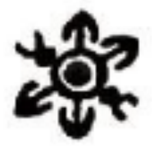
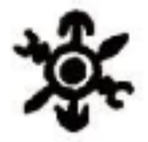
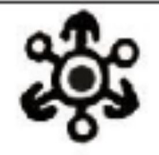
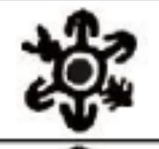
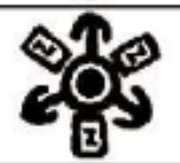
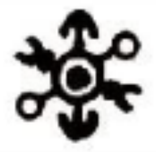
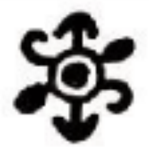
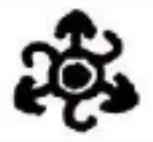
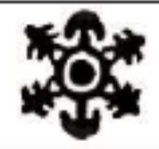
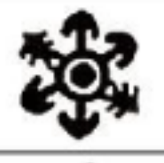
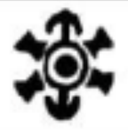
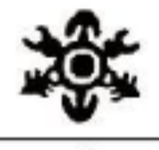
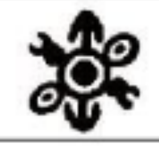
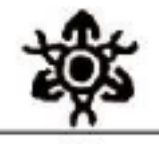
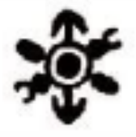
| | | |
|---|---|---|
| 377 |  | **0** 01-028,**I** 1-35, 39 - 65c, 65e-71, 86 -89k, 94a -112c, 112e-115d, 134a - d, 258-264/1a, 264/1d -264/1j, 264/3a-264/4b. **III** 306, 330a, **IVa** 342a, 344 - 345, 347, 349, **IVb** 359-365, 375, **IVd** 398, 405, 417, 420a, 464-466 |
| 378 |  | **I** 36-38a |
| 379 |  | **I** 72-77c |
| 380 |  | **I** 77d-85, 175-182 |
| 381 |  | **I** 90-94 |
| 382 |  | **I** 115e-118, 124-134 |
| 383 |  | **I** 119-123b |
| 383a |  | **III** 316 |
| 384 |  | **I** 135-147, 157 -159, 188a, 195a, **IVd** 449 |
| 385 |  | **I** 160-174 |
| 386 |  | **I** 183-187a, 195a |
| 387 |  | **I** 188, 189-195, 195b |
| 388 |  | **I** 196-204 |
| 389 |  | **I** 205-212b, 264/4c-5a,<br>**II** 273-275a, **III** 317-318 |
| 390 |  | **I** 213-216ç 264/1b-c,<br>**III** 307 |
| 391 |  | **I** 219-226, **II** 284, **III** 324 |
| 392 |  | **I** 227-242, 264/2a-264/2e, 264/6a, **IVb** 366a, 372, **IVd** 447, 473, 476d, **Va** 496b-500, **Vb** 526a, **VIa** 527-539d, **VIb** 540 -582, **VIII** 597-601, 604 -607, 612-617, 623-625, 638-639, 644-646 , 648-649, 652 |
| 393 |  | **I** 243-250, **II** 271, 278, 285a, 286, **III** 308,**IVb** 356 |
| 394 |  | **I** 251-257, 264/1b, 264/1c, **II** 268 |
| 395 |  | **II** 265 |
| 396 |  | **II** 266 |
| 397 |  | **II** 267 |
| 398 |  | **II** 269 |
| 399 |  | **II** 270 |
| 400 |  | **II** 272 |
| 401 |  | **II** 274 |
| 402 |  | **II** 276 **IVd** 463a |
| 403 |  | **II** 277 |
| 404 |  | **I/II** 279-279h, 287 |
| 405 |  | **II** 280-282 |
| 406 |  | **II** 283, 283a |
| 407 |  | **II** 288, **IVa** 352-353 |
| 408 |  | **II** 289 |

Table 4a

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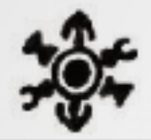
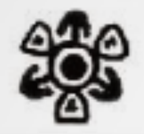
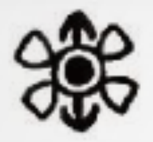
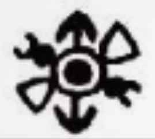
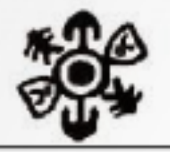
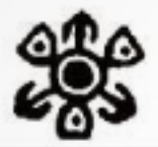
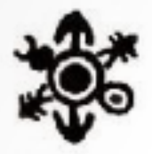
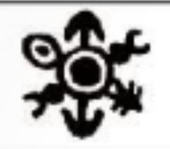
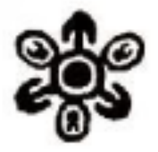
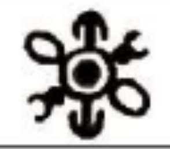
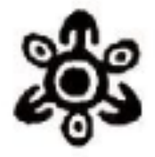
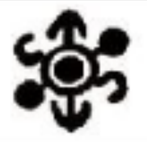
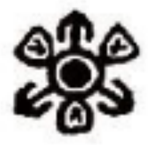
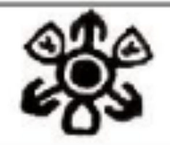
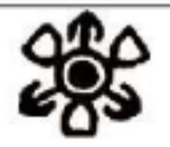
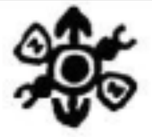
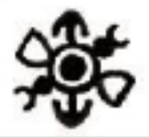
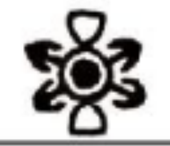
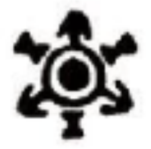
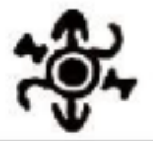
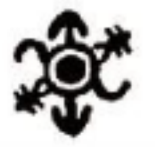
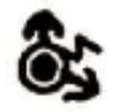
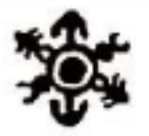
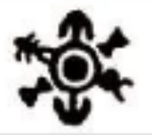
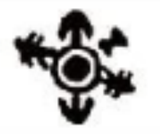
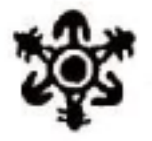
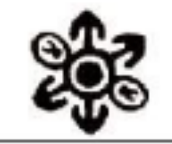
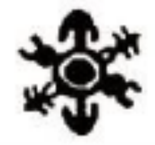
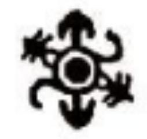
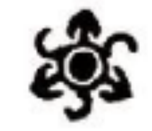
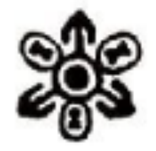
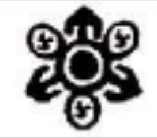
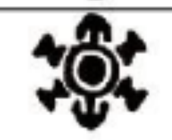
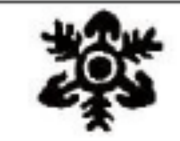
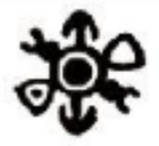
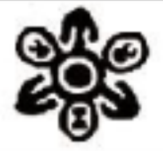
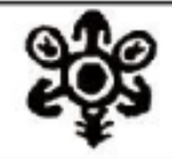
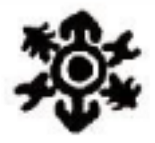
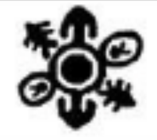
| 409 |  | **II** 290, **IVd** 444a |
| 410 |  | **III** 291, **IVb** 368 |
| 411 |  | **III** 292, 330 |
| 412 |  | **III** 294, 294a |
| 413 |  | **III** 295-296; 298-301 |
| 414 |  | **III** 297, 322, 332, **IVb** 371 |
| 415 |  | **III** 302-303 |
| 416 |  | **III** 304 |
| 417 |  | **III** 305, 325a, **IVb** 367, 373, 381-382, **IVc** 396, **IVd** 416, 418-438, 441a, 450-461a, **Va** 496 |
| 418 |  | **III** 309, 311-312a, 314a |
| 419 |  | **II** 290a, **III** 313,315,319, **IVa** 343, 346 |
| 420 |  | **III** 314 |
| 421 |  | **III** 320, 331, **IVb** 383, **IVd** 476a |
| 422 |  | **III** 321 |
| 423 |  | **III** 297a, 323 |
| 424 |  | **III** 325 |
| 425 |  | **I** 264/6b, **III** 326-328 |
| 426 |  | **III** 329 |
| 427 |  | **III** 332b, 333, **IVa** 350-351, **IVb** 366 **IVc** 384, 395, **IVd** 462, **Va** 506 |
| 428 |  | **III** 334 |
| 429 |  | **IVa** 335, 337 |
| 430 |  | **IVa** 338 |
| 431 |  | **IVa** 339 |
| 432 |  | **IVa** 340, 342 |
| 433 |  | **IVa** 341 |
| 434 |  | **IVa** 341a,348, **IVb** 376, 380, 380a, **IVd** 422a |
| 435 |  | **IVa** 354, **IVb** 369 |
| 436 |  | **IVb** 355 |
| 437 |  | **IVb** 357 |
| 438 |  | **IVb** 358 |
| 439 |  | **III** 308a. **IVb** 374, 374a, 377, **IVc** 385, **IVd** 410 - 415, 472, **Va** 509 |
| 440 |  | **IVb** 379, **IVd** 475-476 |
| 441 |  | **IVc** 386-389 |
| 442 |  | **IVb** 390-394, **IVd** 439-441 |
| 443 |  | **IVc** 397- 397b |
| 444 |  | **IVd** 398-404 |
| 445 |  | **IVd** 406-408 |
| 446 |  | **IVd** 442-446 |
| 447 |  | **IVd** 448 |

Table 4a contd.

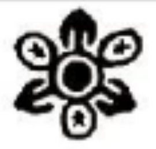
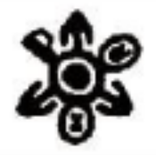
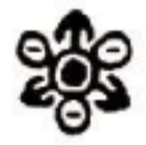
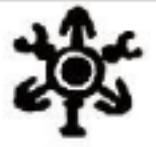
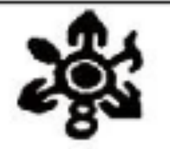
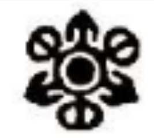
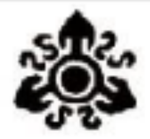
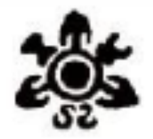
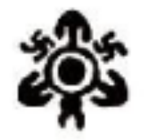
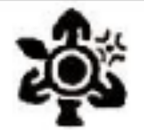
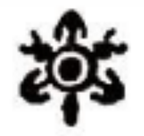
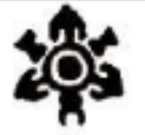
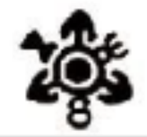
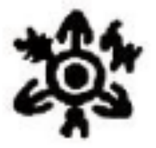
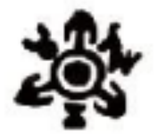
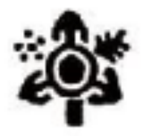
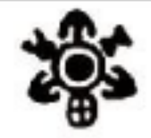
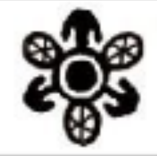
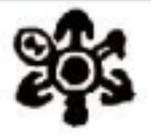
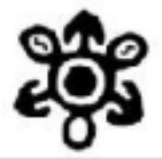
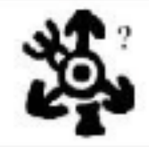
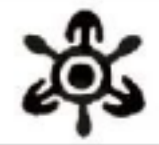
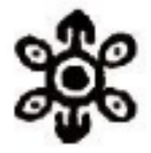
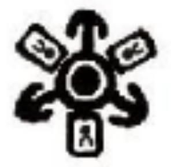
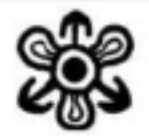
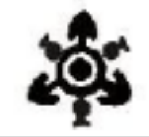
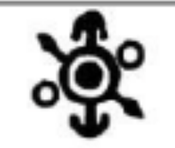
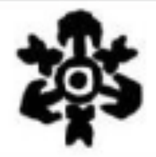
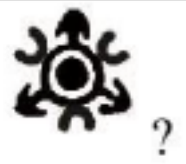
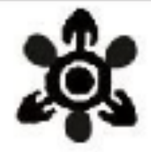
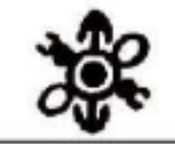
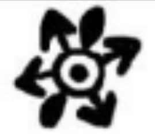
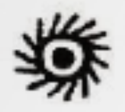
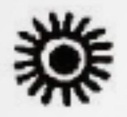
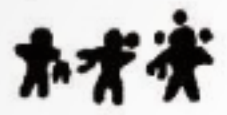
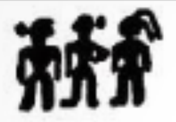
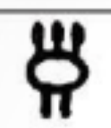
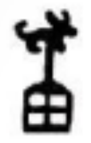
| | | |
|---|---|---|
| 448 |  | **IVd** 463 |
| 449 |  | **IVd** 467-471 |
| 450 |  | **IVd** 474 |
| 451 |  | **Va** 477-484, **VIII** 641-642 |
| 452 |  | **Va** 485-487a |
| 453 |  | **Va** 488 |
| 454 |  | **Va** 489 |
| 455 |  | **Va** 490 |
| 456 |  | **Va** 493 |
| 457 |  | **Va** 494, **Vb** 520 |
| 458 |  | **Va** 495 |
| 459 |  | **Va** 501-503, **VIII** 634, 636 |
| 460 |  | **Va** 496a |
| 461 |  | **Va** 505, 507a-508, **Vb** 516-517 |
| 462 |  | **Va** 507, **Vb** 510-515, **VIII** 643 |
| 463 |  | **Vb** 518-519 |
| 464 |  | **Vb** 521-522 |
| 465 |  | **Vb** 523 |
| 466 |  | **Vb** 524-525 |
| 566 |  | **I** 65d |
| 570 |  | **Vb** 526 |
| 572 |  | **II** 286a |
| 576 |  | **III** 304a |
| 579 |  | **III** 332a |
| 585 |  | **III** 334c |
| 589 |  | **III** 334b |
| 590 |  | **III** 334a |
| 605 |  | **IVc** 396a **IVd** 476b |
| 611 |  | **IVd**475a |
| 624 |  | **I** 151-156 |
| 625 |  | **II** 285, III 310 |
| 634 |  | **I** 264/12a |

Table 4a contd.

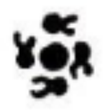
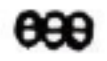
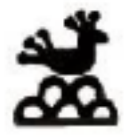
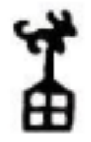
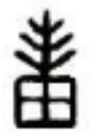
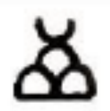
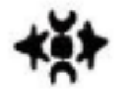
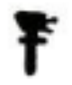
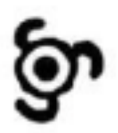
### Table 4b: Sun symbols

| | | |
|---|---|---|
| 467 |  | Series I (most coins), Series II occasional, Series III very rarely, minor varieties occur |
| 468 |  | Series II -VI. Minor varieties occur e.g. in number of rays |

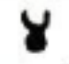
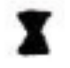
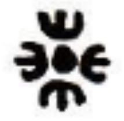
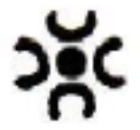
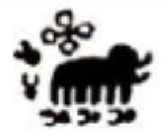
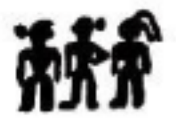
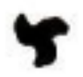
### Table 4c: Special obverse marks of Series VII

| | | |
|---|---|---|
| 469 |  | **VII** 584-587. Varieties occur; three separate punches |
| 470 |  | **VII** 588-592. Single punch |
| 471 |  | **VII** 593-596 |
| 472 |  | **VII** 593-596. See also reverse marks |

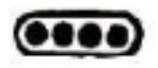
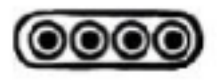
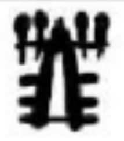
### Table 4d: Bold reverse marks

| | | |
|---|---|---|
| 14 |  | **Vb** 510-511, 518 -523, **VIb** 540, 543, 548-549, 552-553, 571-572, **VII** 588, see also 4th & 5th mks |
| 15 |  | **Vb** 510-511, 513 -514, 516-517, **VIb** 548-550, 554 -567, **VII** 589, 594, see also 4th & 5th mks |
| 265 |  | **Vb** 510, 512 -513, 515, 524-525, **VIb** 568-570, **VII** 590 591, 593, see also 3rd mks |
| 472 |  | **Vb** 517, **VIb** 542-543, 546, 568-570, 577, see also Series VII mks |
| 16 |  | **Vb** 526, **VIb** 546-547, 576 - 582, **VII** 585, see also 4th & 5th mks |
| 374 |  | **VIb** 542-543, see also 3rd mks |
| 473 |  | **VIb** 542-543, 545, 573-575, 577, VII 586-587, 595-596 |
| 474 |  | VIb 543, VII 584 |
| 140 |  | **VIb** 542-543, 560, 568-570, 574, **VII** 589, 594, see also 5th mks |

### Table 4d contd.: Bold reverse marks

| | | |
|---|---|---|
| 475 |  (small) | **VIb** 542, 566-567 |
| 476 |  | **VIb** 543, 583, VII 589, 593-595 |
| 477 |  | **VIb** 543, **VII** 595 |
| 478 |  | **VIb** 543 |
| 479 |  | **VIb** 566, (**VIII** 609) |
| 470 |  | **VIb** 568-570, see also Series VII mks |
| 480 |  | **VIb** 568-570,583 |

### Table 4e: Large obverse countermarks

| | | |
|---|---|---|
| 481 |  | Series III & IV up to early IVd |
| 482 |  | Series III & IV up to early IVd |
| 567 |  | **VIb** 574a |

## Appendix 2 Table 5: Series VIII marks

Marks unique to Series VIII are listed here. Marks used in Series VIII that are copied from earlier Series are listed in the other tables in Appendix 2.

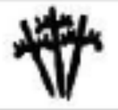
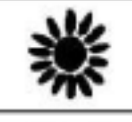
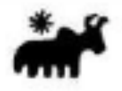
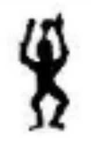
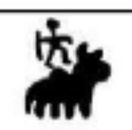
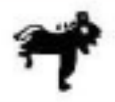
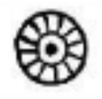
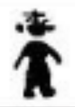
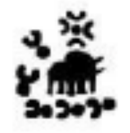
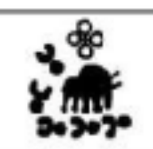
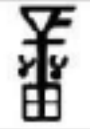
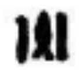
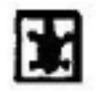
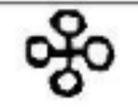
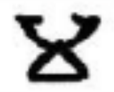
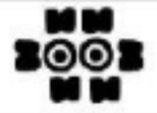
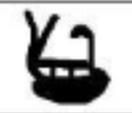
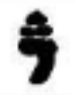
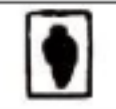
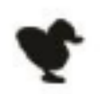
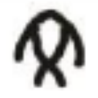
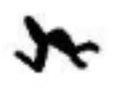
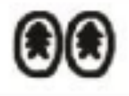
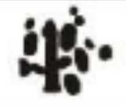
| | | | |
|---|---|---|---|
| 535 |  | Three thorn hedge plants each with two branches | **VIII** 602 |
| 536 |  | Flower petal with solid circle in centre | **VIII** 602-604 |
| 537 |  | Bull right, small solid sun above back | **VIII** 604 |
| 538 |  | Human figure standing facing with both arms raised holding stick in right and dagger in left, hair raised high above head | **VIII** 604-607 |
| 539 |  | Bull right, human figure holding stick in right hand above back | **VIII** 606-607 |
| 540 |  | Lion seated right | **VIII** 609 |
| 541 |  | Wheel with outline circle enclosing dot at hub, and more than eight spokes | **VIII** 609, 627 |
| 542 |  | Human figure facing with elaborate headdress | **VIII** 609 |
| 543 |  | Elephant right, three left-facing taurines below, two to the left, and a dot with four outward-facing arcs round above | **VIII** 611 |
| 544 |  | As 543 but Ujjain symbol above | **VIII** 610 |
| 376 |  | Outline triangle-headed standard right | **VIII** 612 |
| 545 |  | Fish between two poles | **VIII** 621 |
| 546 |  | Tortoise in a box | **VIII** 622 |
| 547 |  | Ujjain symbol | **VIII** 621-623 |
| 548 |  | Triangular base supporting antler-like shape | **VIII** 626 |
| 549 |  | Two circles enclosing dots, six dumbells around | **VIII** 627 |
| 550 |  | Heavy sailing ship right with foremast, bowspit, cabins and mizzen | **VIII** 627 |
| 551 |  | Conch shell | **VIII** 627 |
| 554 |  | Conch shell in a box | **VIII** 629 |
| 555 |  | Duck sitting right | **VIII** 630 |
| 556 |  | Stylised fish | **VIII** 629-634 |
| 557 |  | Shape like a human crawling left | **VIII** 630 |
| 558 |  | Two ovals each enclosing a fish | **VIII** 631 |
| 559 |  | Plant with five (visible) buds and random dots around (may be incomplete) | **VIII** 633 |
| 560 | | Lizard with (?) four feet | **VIII** 633 |

Table 5

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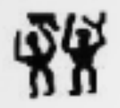
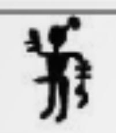
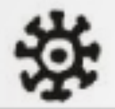
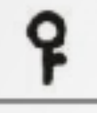
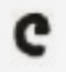
|---|---|---|---|
| 561 |  | Two human figures standing facing beside each other with arms raised, the left figure holds a large shield, the right a stick and a V-shaped object | **VIII** 608 |
| 562 |  | Ithyphallic human figure standing left with headdress in a high bun, holding uncertain objects | **VIII** 608 |
| 563 |  | Waterwheel with central hub eight cups and outline circle enclosing dot at hub | **VIII** 644 |
| 564 |  | Object like a key with open circle as handle | **VIII** 644 |
| 565 |  | Object like the letter C | **VIII** 644 |

Table 5 contd.

## Appendix 2 Table 6 Thumbnail quick reference images of all marks in numerical order

The following five pages display in compact format all the symbols recorded in the Catalogue, in numerical order. The symbol numbers are the same as in the first edition, when there were 482 marks. In the present edition this has risen to 625. The numbering system originally began with fifth marks (roughly 1-146) followed by fourth marks (147-271), third marks (272-376), six-armed symbols (377-466) and finally the remainder – suns, special marks of Series VII, bold reverse marks and large obverse countermarks (467-482). Within that sequence, certain numbers were already omitted (e.g. 159, 256, 274) due to correction procedures in the course of the original compilation. Those numbers are still omitted, and all marks that have been noted since the first edition are numbered from 483 onwards, in random order.

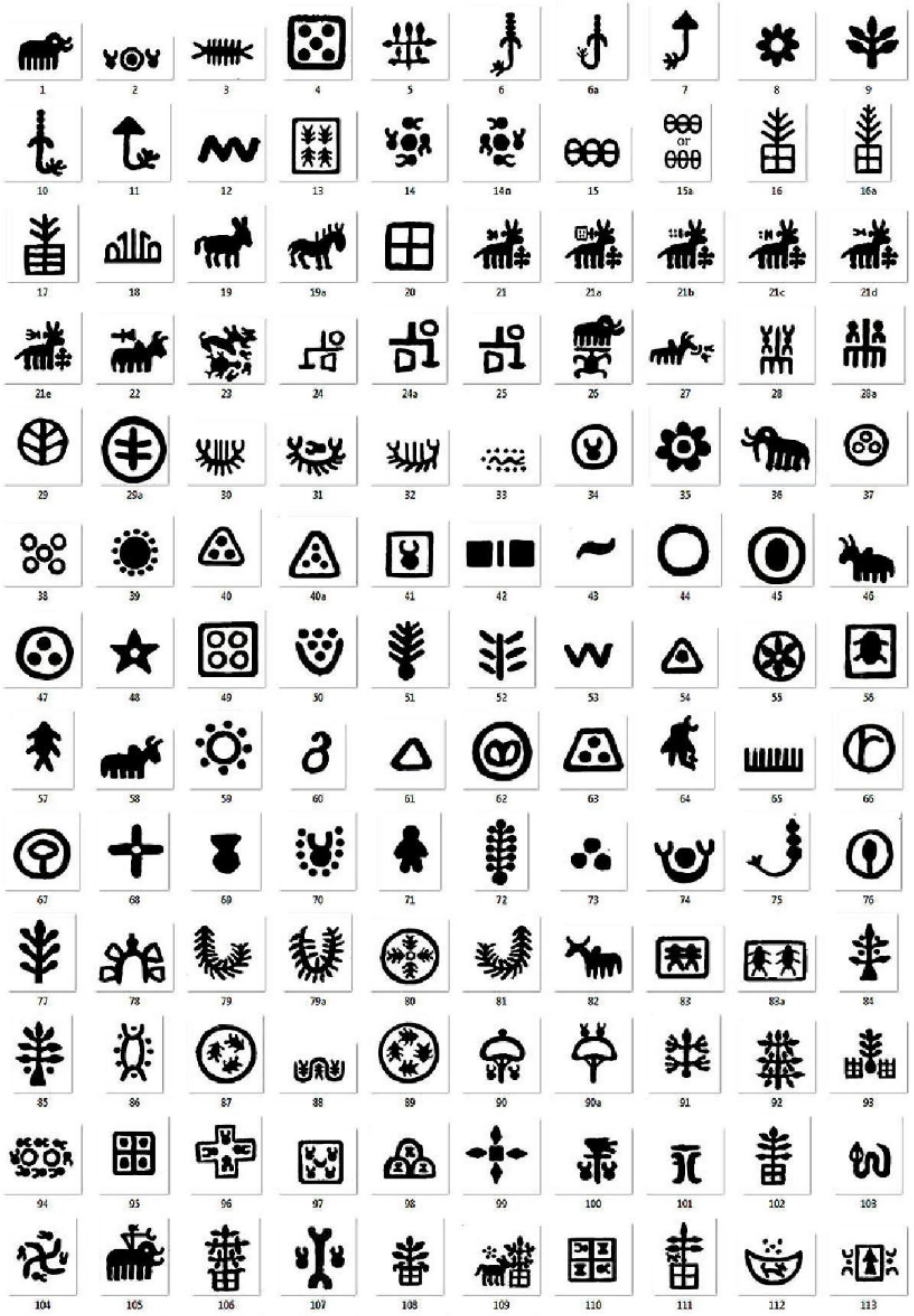

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Table 6

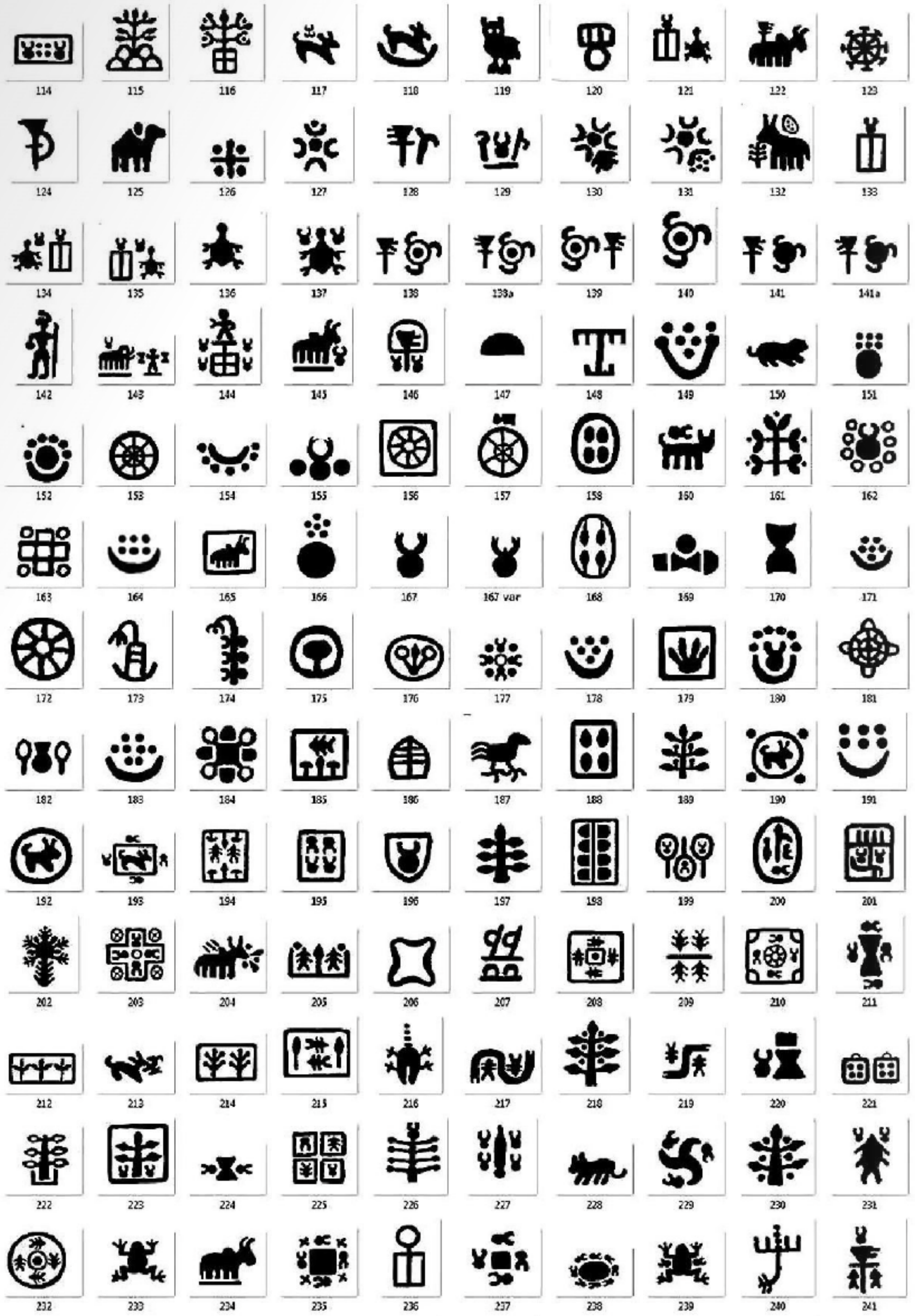
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Table 6 contd.

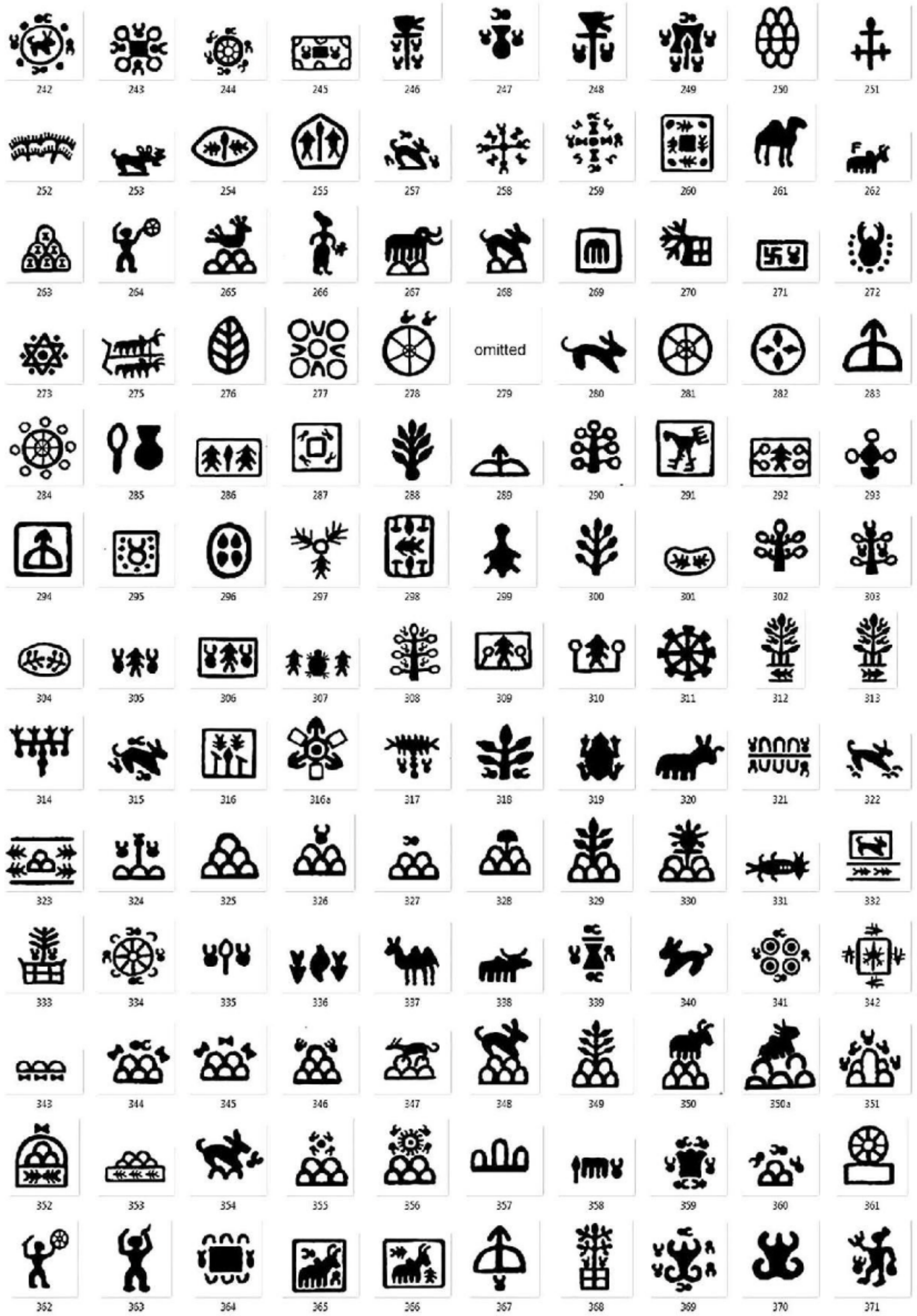
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Table 6 contd.

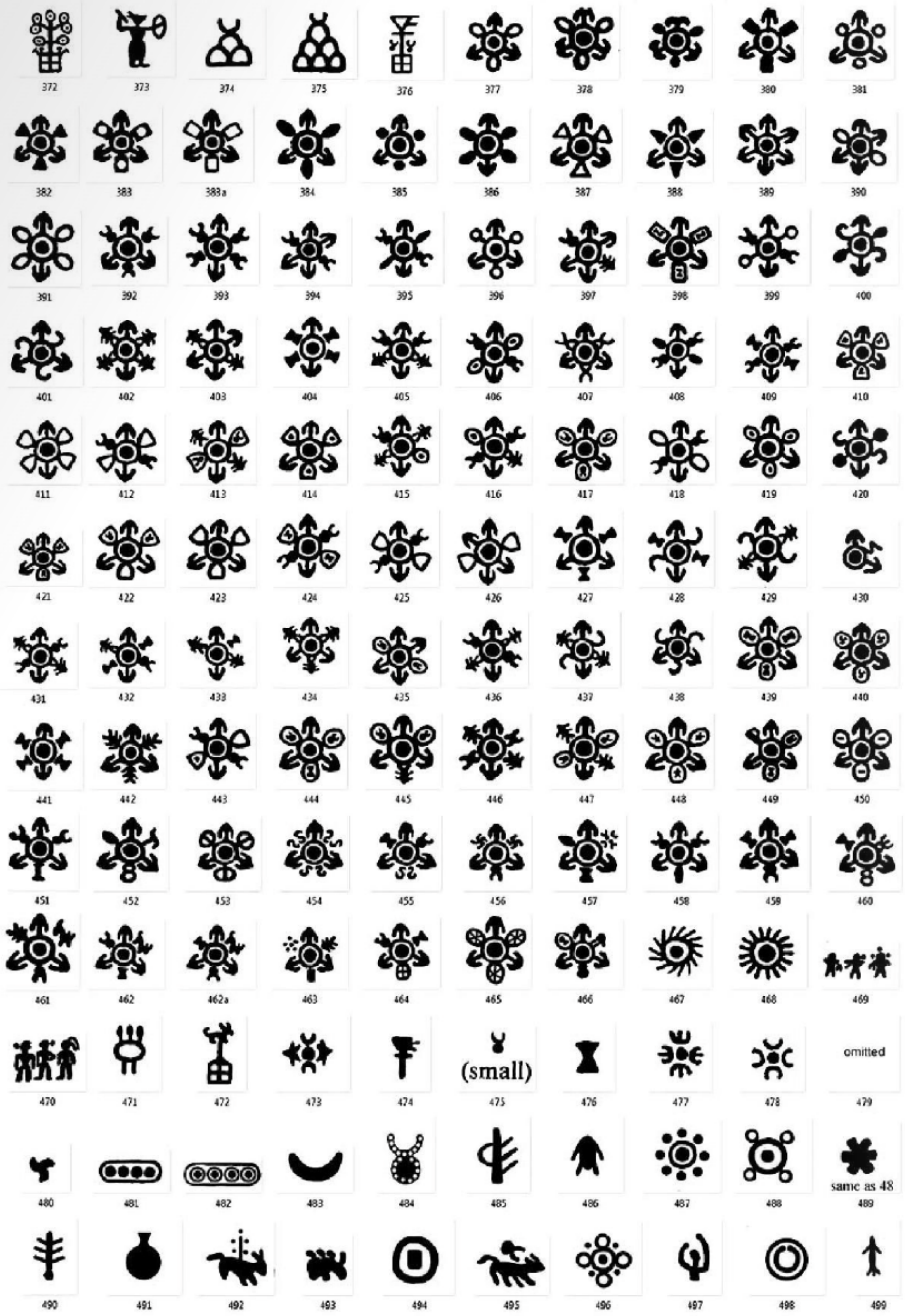
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Table 6 contd.

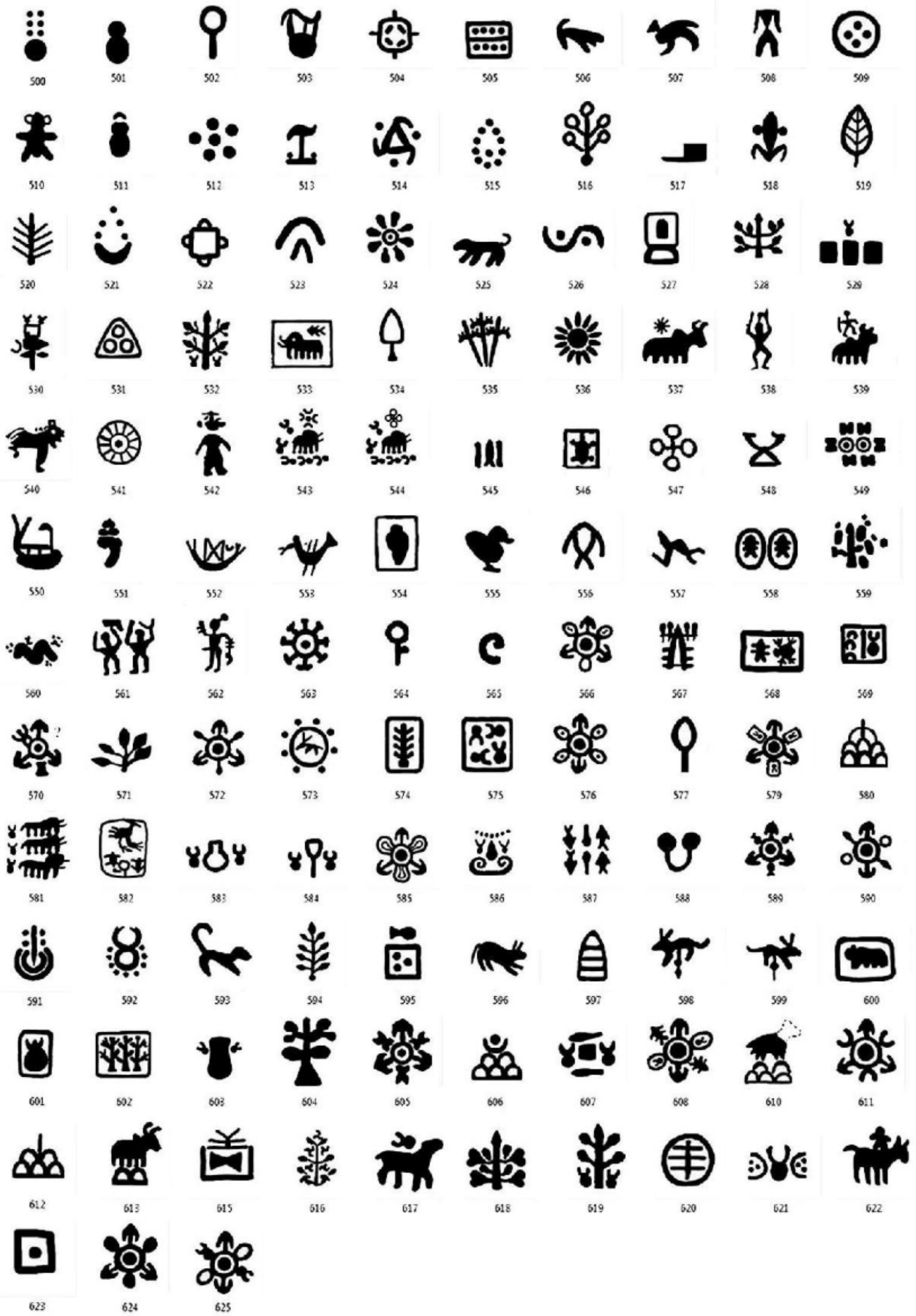
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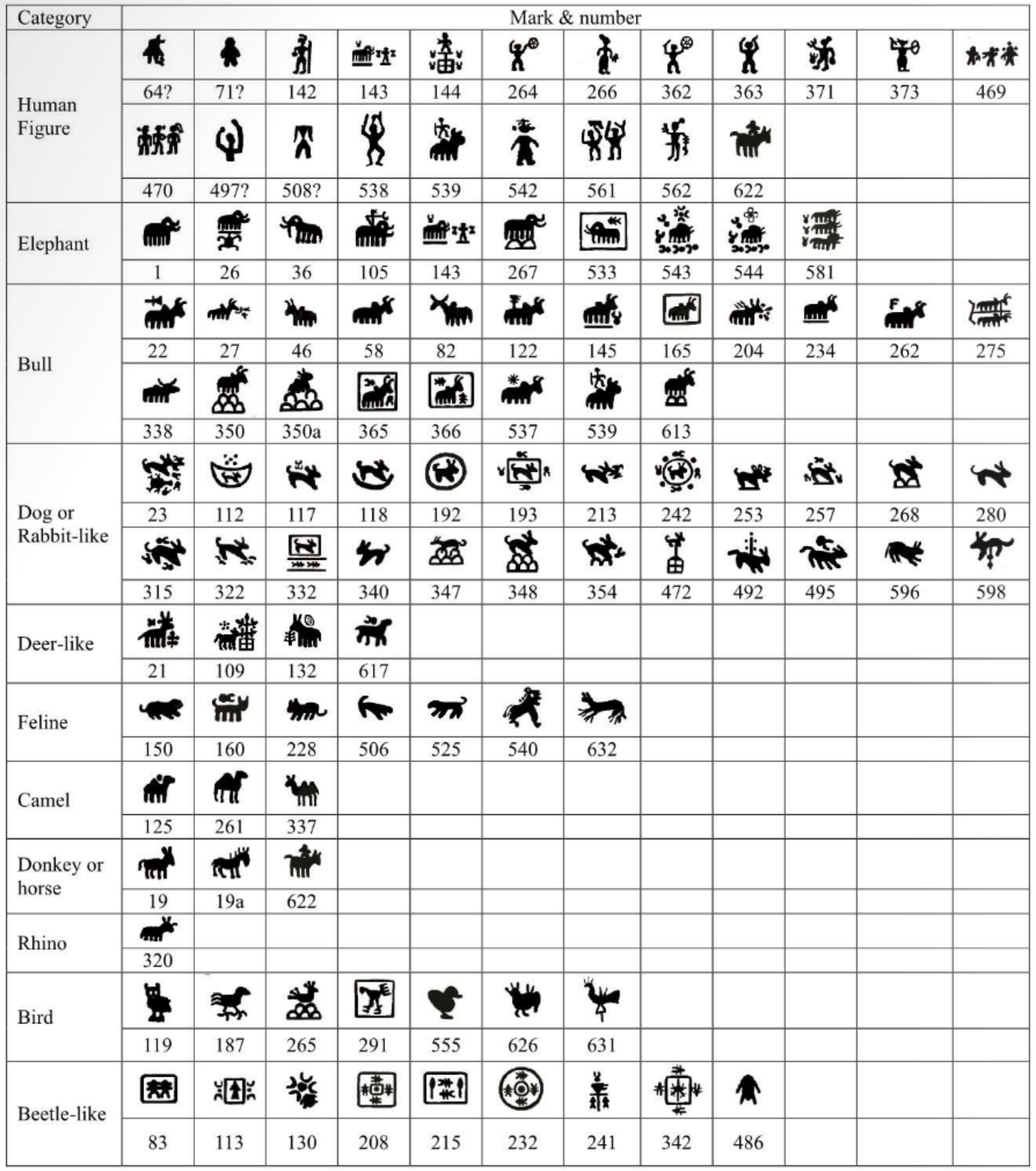
Table 6 contd.

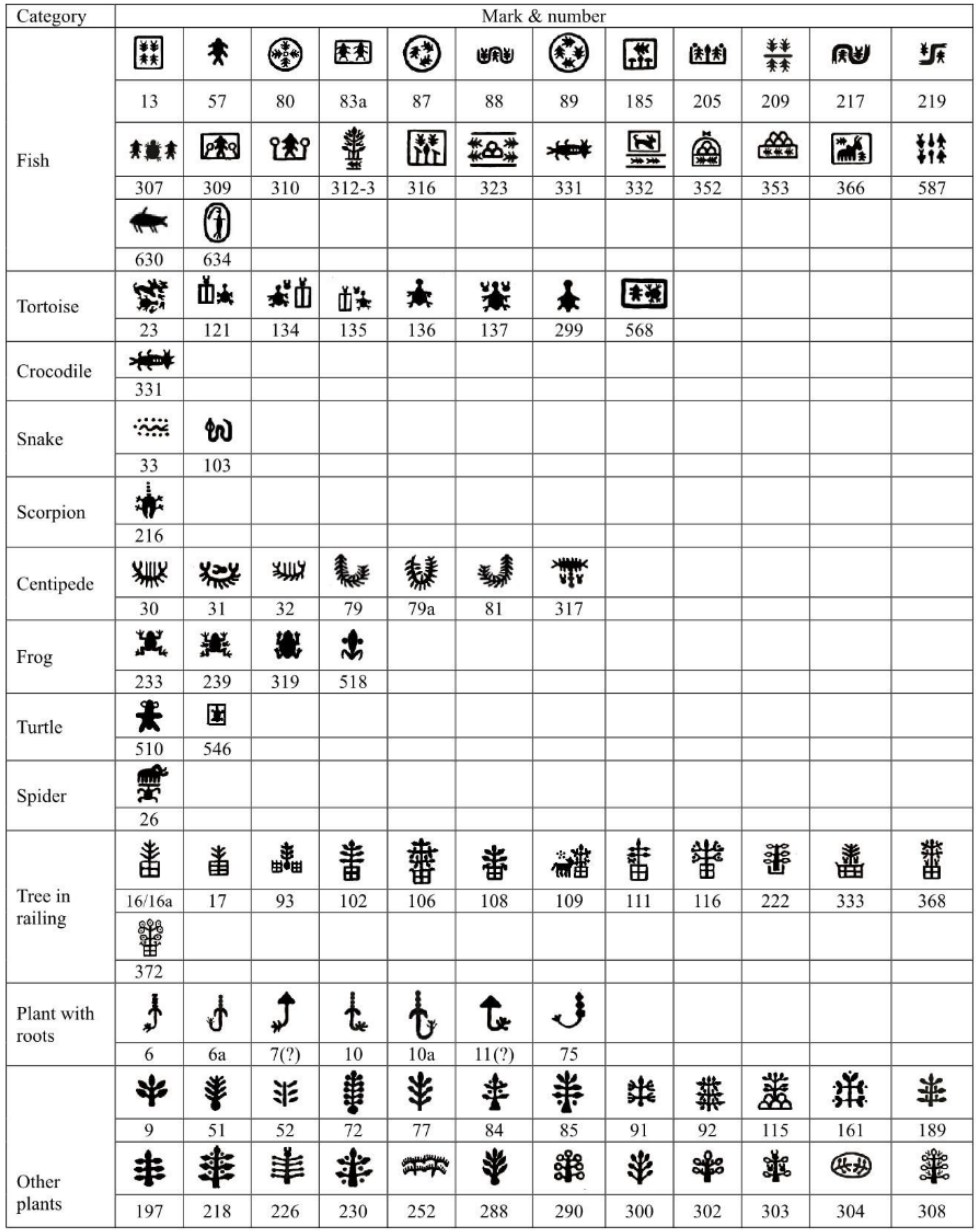
# Appendix 3: Marks by subject

This table lists selected categories of distinctive or common marks. Items may occur in more than one category. Geometric shapes are mostly excluded: they are very diverse and often indistinct. Small taurines occur on upwards of 150 different marks so do not serve as type identifiers.



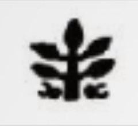
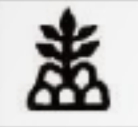
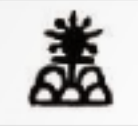
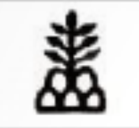
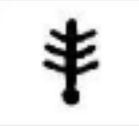
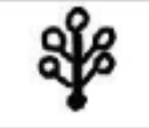
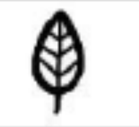
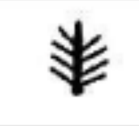
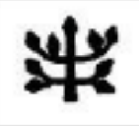
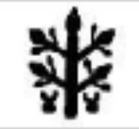
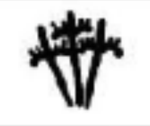
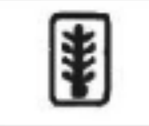
| Category | Mark & number | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Human Figure | 64? | 71? | 142 | 143 | 144 | 264 | 266 | 362 | 363 | 371 | 373 | 469 |
| | 470 | 497? | 508? | 538 | 539 | 542 | 561 | 562 | 622 | | | |
| Elephant | 1 | 26 | 36 | 105 | 143 | 267 | 533 | 543 | 544 | 581 | | |
| Bull | 22 | 27 | 46 | 58 | 82 | 122 | 145 | 165 | 204 | 234 | 262 | 275 |
| | 338 | 350 | 350a | 365 | 366 | 537 | 539 | 613 | | | | |
| Dog or Rabbit-like | 23 | 112 | 117 | 118 | 192 | 193 | 213 | 242 | 253 | 257 | 268 | 280 |
| | 315 | 322 | 332 | 340 | 347 | 348 | 354 | 472 | 492 | 495 | 596 | 598 |
| Deer-like | 21 | 109 | 132 | 617 | | | | | | | | |
| Feline | 150 | 160 | 228 | 506 | 525 | 540 | 632 | | | | | |
| Camel | 125 | 261 | 337 | | | | | | | | | |
| Donkey or horse | 19 | 19a | 622 | | | | | | | | | |
| Rhino | 320 | | | | | | | | | | | |
| Bird | 119 | 187 | 265 | 291 | 555 | 626 | 631 | | | | | |
| Beetle-like | 83 | 113 | 130 | 208 | 215 | 232 | 241 | 342 | 486 | | | |

Appendix 3



| Category | Mark & number | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fish | 13 | 57 | 80 | 83a | 87 | 88 | 89 | 185 | 205 | 209 | 217 | 219 |
| | 307 | 309 | 310 | 312-3 | 316 | 323 | 331 | 332 | 352 | 353 | 366 | 587 |
| | 630 | 634 | | | | | | | | | | |
| Tortoise | 23 | 121 | 134 | 135 | 136 | 137 | 299 | 568 | | | | |
| Crocodile | 331 | | | | | | | | | | | |
| Snake | 33 | 103 | | | | | | | | | | |
| Scorpion | 216 | | | | | | | | | | | |
| Centipede | 30 | 31 | 32 | 79 | 79a | 81 | 317 | | | | | |
| Frog | 233 | 239 | 319 | 518 | | | | | | | | |
| Turtle | 510 | 546 | | | | | | | | | | |
| Spider | 26 | | | | | | | | | | | |
| Tree in railing | 16/16a | 17 | 93 | 102 | 106 | 108 | 109 | 111 | 116 | 222 | 333 | 368 |
| | 372 | | | | | | | | | | | |
| Plant with roots | 6 | 6a | 7(?) | 10 | 10a | 11(?) | 75 | | | | | |
| Other plants | 9 | 51 | 52 | 72 | 77 | 84 | 85 | 91 | 92 | 115 | 161 | 189 |
| | 197 | 218 | 226 | 230 | 252 | 288 | 290 | 300 | 302 | 303 | 304 | 308 |

Appendix 3 contd.

| Category | Mark & number | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Other plants contd. |  |  |  |  |  |  |  |  |  |  |  |  |
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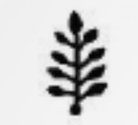
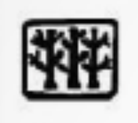
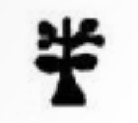
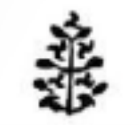
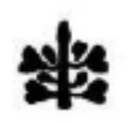
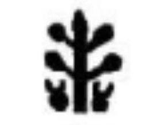
| |  |  |  |  |  |  | | | | | | |
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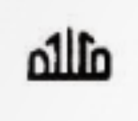
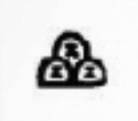
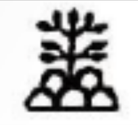
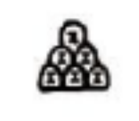
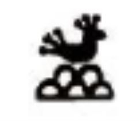
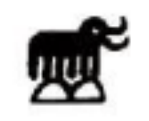
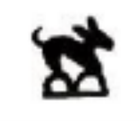
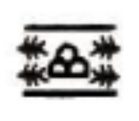
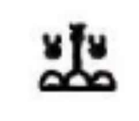
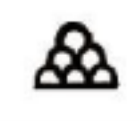
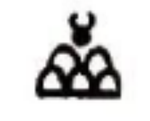
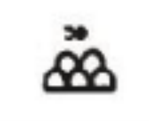
| Arches |  |  |  |  |  |  |  |  |  |  |  |  |
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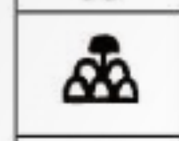
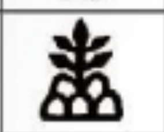
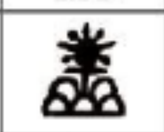
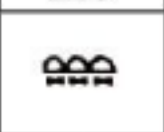
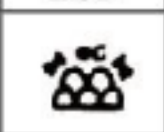
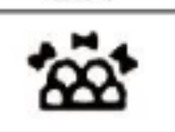
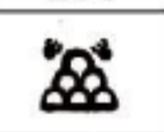
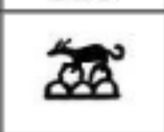
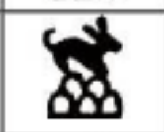
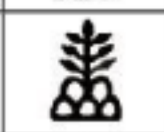
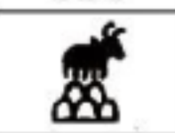
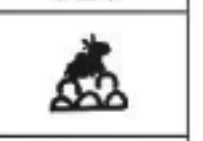
| |  |  |  |  |  |  |  |  |  |  |  |  |
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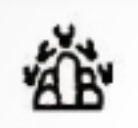
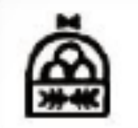
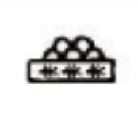
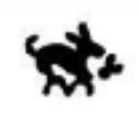
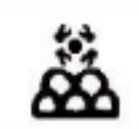
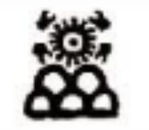
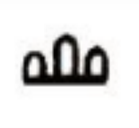
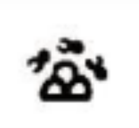
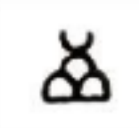
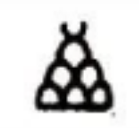
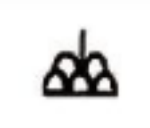
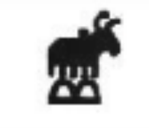
| |  |  |  |  |  |  |  |  |  |  |  |  |
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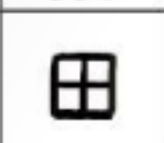
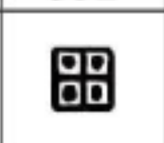
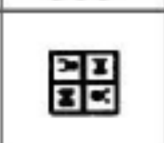
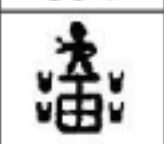
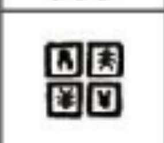
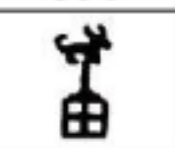
| Squared square |  |  |  |  |  |  | | | | | | |
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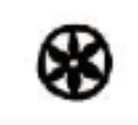
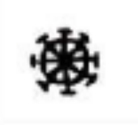
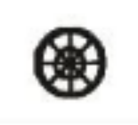
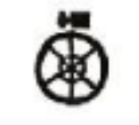
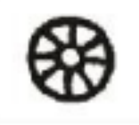
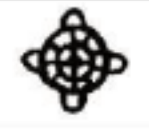
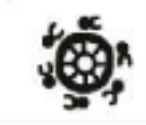
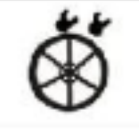
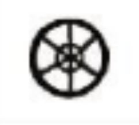
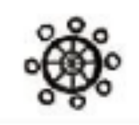
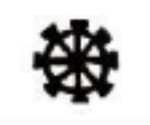
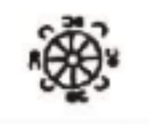
| Wheels with spokes |  |  |  |  |  |  |  |  |  |  |  |  |
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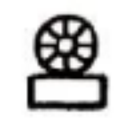
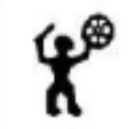
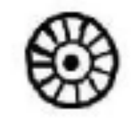
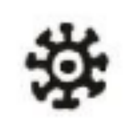
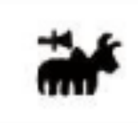
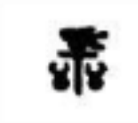
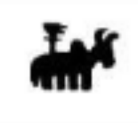
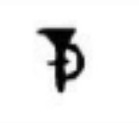
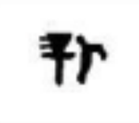
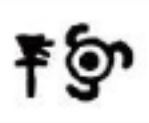
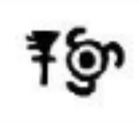
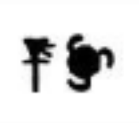
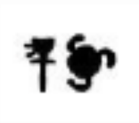
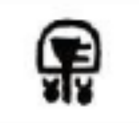
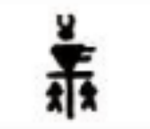
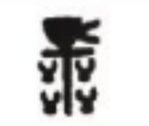
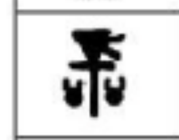
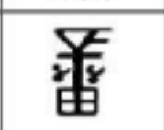
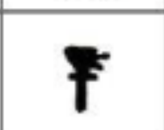
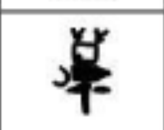
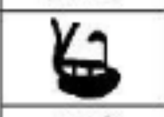
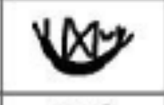
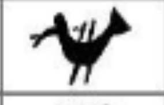
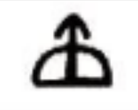
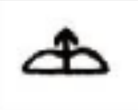
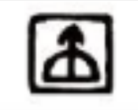
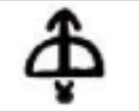
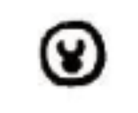
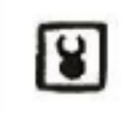
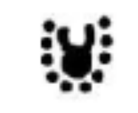
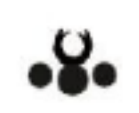
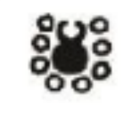
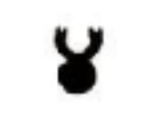
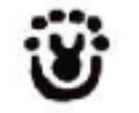
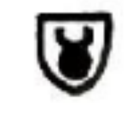
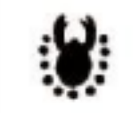
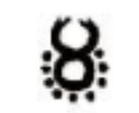
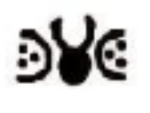
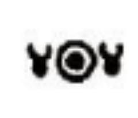
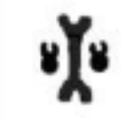
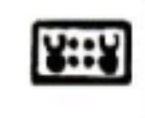
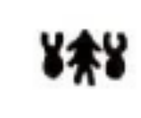
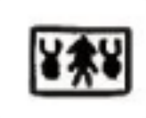
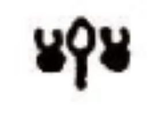
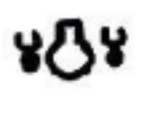
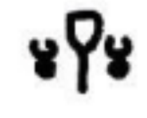
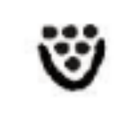
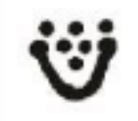
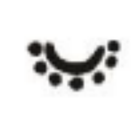
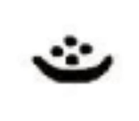
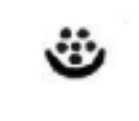
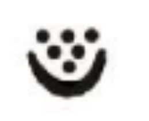
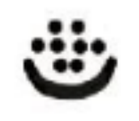
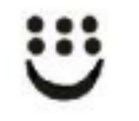
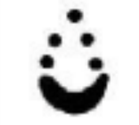
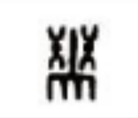
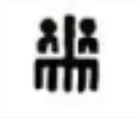
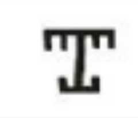
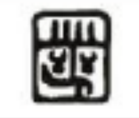
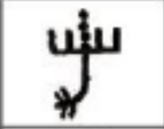
| |  |  |  |  | | | | | | | | |
| | 361 | 362 | 541 | 563 | | | | | | | | |
| Standard |  |  |  |  |  |  |  |  |  |  |  |  |
| | 22 | 100 | 122 | 124 | 128 | 138 | 139 | 141 | 141a | 146 | 241 | 246 |
| |  |  |  |  | | | | | | | | |
| | 248 | 376 | 474 | 530 | | | | | | | | |
| Ship |  |  |  | | | | | | | | | |
| | 550 | 552 | 553 | | | | | | | | | |
| Bow & arrow |  |  |  |  | | | | | | | | |
| | 283 | 289 | 294 | 367 | | | | | | | | |
| Large taurine |  |  |  |  |  |  |  |  |  |  |  | |
| | 34 | 41 | 70 | 155 | 162 | 167 | 180 | 196 | 272 | 592 | 621 | |
| Two taurines |  |  |  |  |  |  |  |  | | | | |
| | 2 | 107 | 114 | 305 | 306 | 335 | 583 | 584 | | | | |
| Arc & dots |  |  |  |  |  |  |  |  |  | | | |
| | 50 | 149 | 154 | 164 | 171 | 178 | 183 | 191 | 521 | | | |
| Rake |  |  |  |  |  | | | | | | | |
| | 28 | 28a | 148 | 201 | 240 | | | | | | | |

Appendix 3 contd.

# Appendix 4: The '1978' Magadhan hoard with distinctive bankers marks

The hoard is discussed in the text in the section on bankers marks. It dates to 1978 and had no provenance. There were 102 coins in the hoard of which 101 were of Series III or IV, the other coin was a *janapada* piece, possibly not a part of the hoard – the dealer supplying it was wont to lump together different acquisitions, but the remainder of the hoard is certainly authentic, judging from their condition, patina, composition and the distinctive bankers marks. None of the coins in this hoard was restruck, yet the spread of types lies well within the restriking phase. The bankers marks on 30 of the coins are larger than normal (Fig. 46). This characteristic has been noted on other coins of Series III X (the Rhinoceros class). It may indicate a regional custom close to the mint source for this class, where, at the time of deposition, the hoard had avoided mixing with restruck coins.

| Series | Type no. | No of coins |
|---|---|---|
| III | 291 | 2 |
| | 302 | 1 |
| | 305 | 13 |
| | 306 | 1 |
| | 307 | 1 |
| | 308? | 1 |
| | 314a | 1 |
| | 317 | 1 |
| | 320 | 22 |
| | 322 | 6 |
| | 327 | 1 |
| IVb | 356 | 1 |
| IVc | 388 | 1 |
| IVd | 418 | 1 |
| | 442 | 29 |
| | 443 | 12 |
| | 444 | 4 |
| | 445 | 3 |
| Janapada coin | - | 1 |
| total | | 102 |

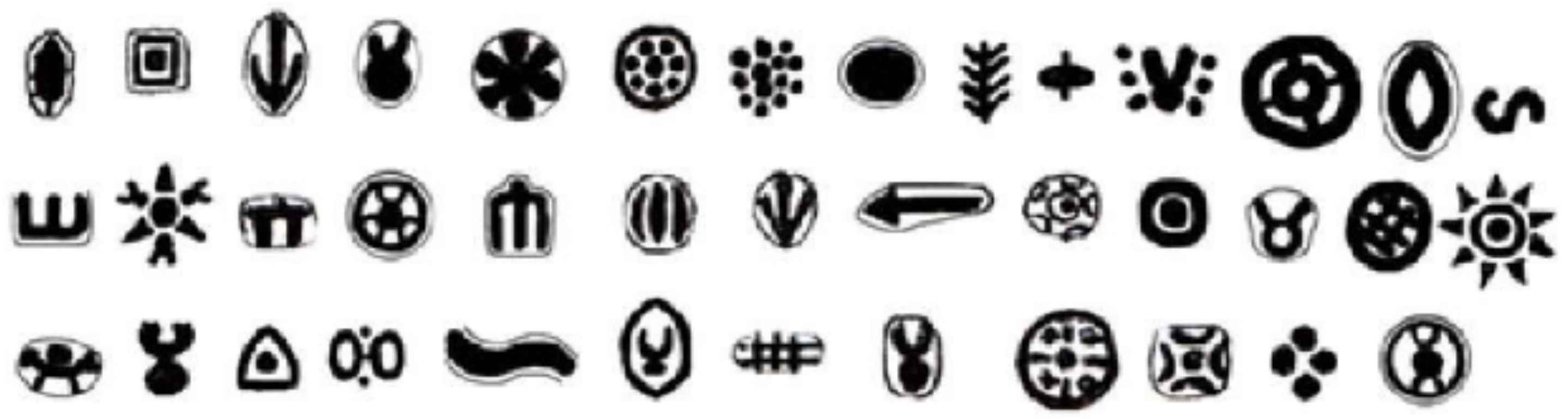


Fig. 46: Sample of more prominent bankers marks from the 1978 hoard including larger marks

# Appendix 5: A Mauryan hoard of 300 coins

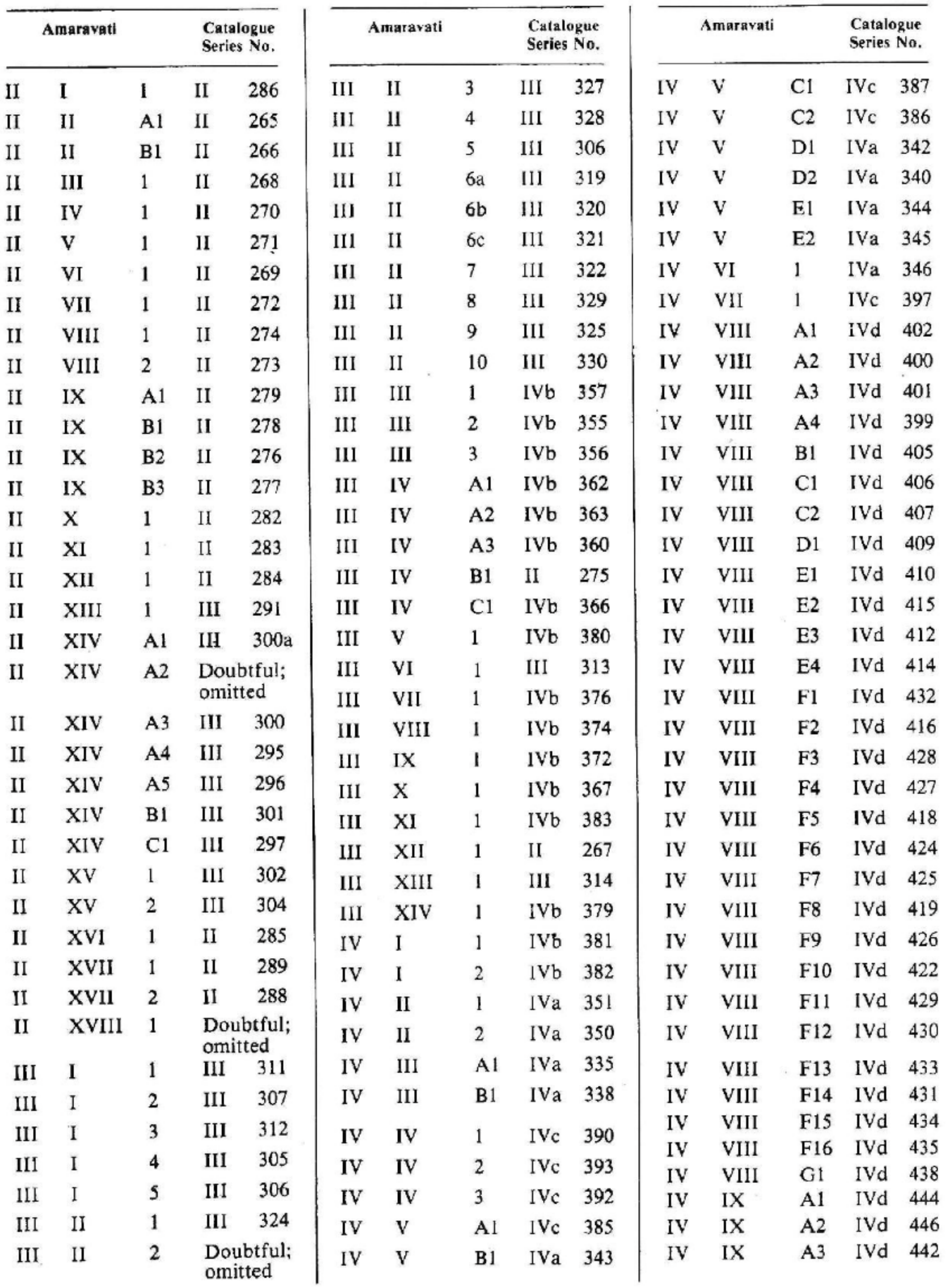
See Introduction to Series VII. The hoard contained fresh coins of Type 582 (Series VIb, hitherto very rare) and Type 585 (Series VII). Together with the absence of some common types from this hoard, especially types 550, 566, 574 and 575, this supports the conclusion that Series VII was underway in parallel with Series VIb, and that these missing types had yet to be issued. The contemporaneity of the two Series was already postulated from other factors (see Introduction to Series VII page 183). The absence of earlier types from Series V and VI in this hoard may be due to the geographic location of the hoard, but this was unfortunately not recorded.

| Series | Type | No of coins | common types missing | Series | Type | No of coins | common types missing | Series | Type | No of coins | common types missing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IVd | 425 | 1 | | Vb | 516 | 4 | | VIb | 569 | 1 | |
| | 468? | 1 | | | 519 | 1 | | | 570 | 6 | |
| Va | | | 477 | | 523 | 1 | | | 571 | 9 | |
| | 479 | 1 | | VIa | 534 | 4 | | | 572? | 1 | |
| | 480 | 1 | | | | | 537 | | 573 | 6 | |
| | 482 | 15 | | | 538 | 1 | | | | | 574 |
| | | | 484 | VIb | 542 | 11 | | | | | 575 |
| | | | 486 | | 543 | 58 | | | 577 | 2 | |
| | 488 | 2 | | | 546 | 4 | | | 579 | 1 | |
| | 499 | 2 | | | 549 | 1 | | | 581 | 1 | |
| | 505 | 1 | | | | | 550 | | 582 | 108 | |
| | | | 506 | | 552 | 7 | | VII | 585 | 2 | |
| | 507 | 6 | | | 555 | 1 | | | 586 | 1 | |
| | 509 | 4 | | | 556 | 1 | | | 594 | 1 | |
| Vb | 510 | 6 | | | 557 | 4 | | | 595 | 10 | |
| | 511 | 1 | | | | | 566 | Unclass | - | 8 | |
| | 512 | 1 | | | 568 | 3 | | Total | | 300 | |

Table 27: Types present and absent in the Mauryan hoard of 300

# Appendix 6: Cross reference with the Amaravati Catalogue

*Facsimile from the First Edition*



| Amaravati | | | Catalogue Series | No. |
|---|---|---|---|---|
| II | I | 1 | II | 286 |
| II | II | A1 | II | 265 |
| II | II | B1 | II | 266 |
| II | III | 1 | II | 268 |
| II | IV | 1 | II | 270 |
| II | V | 1 | II | 271 |
| II | VI | 1 | II | 269 |
| II | VII | 1 | II | 272 |
| II | VIII | 1 | II | 274 |
| II | VIII | 2 | II | 273 |
| II | IX | A1 | II | 279 |
| II | IX | B1 | II | 278 |
| II | IX | B2 | II | 276 |
| II | IX | B3 | II | 277 |
| II | X | 1 | II | 282 |
| II | XI | 1 | II | 283 |
| II | XII | 1 | II | 284 |
| II | XIII | 1 | III | 291 |
| II | XIV | A1 | III | 300a |
| II | XIV | A2 | Doubtful; omitted | |
| II | XIV | A3 | III | 300 |
| II | XIV | A4 | III | 295 |
| II | XIV | A5 | III | 296 |
| II | XIV | B1 | III | 301 |
| II | XIV | C1 | III | 297 |
| II | XV | 1 | III | 302 |
| II | XV | 2 | III | 304 |
| II | XVI | 1 | II | 285 |
| II | XVII | 1 | II | 289 |
| II | XVII | 2 | II | 288 |
| II | XVIII | 1 | Doubtful; omitted | |
| III | I | 1 | III | 311 |
| III | I | 2 | III | 307 |
| III | I | 3 | III | 312 |
| III | I | 4 | III | 305 |
| III | I | 5 | III | 306 |
| III | II | 1 | III | 324 |
| III | II | 2 | Doubtful; omitted | |

| Amaravati | | | Catalogue Series | No. |
|---|---|---|---|---|
| III | II | 3 | III | 327 |
| III | II | 4 | III | 328 |
| III | II | 5 | III | 306 |
| III | II | 6a | III | 319 |
| III | II | 6b | III | 320 |
| III | II | 6c | III | 321 |
| III | II | 7 | III | 322 |
| III | II | 8 | III | 329 |
| III | II | 9 | III | 325 |
| III | II | 10 | III | 330 |
| III | III | 1 | IVb | 357 |
| III | III | 2 | IVb | 355 |
| III | III | 3 | IVb | 356 |
| III | IV | A1 | IVb | 362 |
| III | IV | A2 | IVb | 363 |
| III | IV | A3 | IVb | 360 |
| III | IV | B1 | II | 275 |
| III | IV | C1 | IVb | 366 |
| III | V | 1 | IVb | 380 |
| III | VI | 1 | III | 313 |
| III | VII | 1 | IVb | 376 |
| III | VIII | 1 | IVb | 374 |
| III | IX | 1 | IVb | 372 |
| III | X | 1 | IVb | 367 |
| III | XI | 1 | IVb | 383 |
| III | XII | 1 | II | 267 |
| III | XIII | 1 | III | 314 |
| III | XIV | 1 | IVb | 379 |
| IV | I | 1 | IVb | 381 |
| IV | I | 2 | IVb | 382 |
| IV | II | 1 | IVa | 351 |
| IV | II | 2 | IVa | 350 |
| IV | III | A1 | IVa | 335 |
| IV | III | B1 | IVa | 338 |
| IV | IV | 1 | IVc | 390 |
| IV | IV | 2 | IVc | 393 |
| IV | IV | 3 | IVc | 392 |
| IV | V | A1 | IVc | 385 |
| IV | V | B1 | IVa | 343 |

| Amaravati | | | Catalogue Series | No. |
|---|---|---|---|---|
| IV | V | C1 | IVc | 387 |
| IV | V | C2 | IVc | 386 |
| IV | V | D1 | IVa | 342 |
| IV | V | D2 | IVa | 340 |
| IV | V | E1 | IVa | 344 |
| IV | V | E2 | IVa | 345 |
| IV | VI | 1 | IVa | 346 |
| IV | VII | 1 | IVc | 397 |
| IV | VIII | A1 | IVd | 402 |
| IV | VIII | A2 | IVd | 400 |
| IV | VIII | A3 | IVd | 401 |
| IV | VIII | A4 | IVd | 399 |
| IV | VIII | B1 | IVd | 405 |
| IV | VIII | C1 | IVd | 406 |
| IV | VIII | C2 | IVd | 407 |
| IV | VIII | D1 | IVd | 409 |
| IV | VIII | E1 | IVd | 410 |
| IV | VIII | E2 | IVd | 415 |
| IV | VIII | E3 | IVd | 412 |
| IV | VIII | E4 | IVd | 414 |
| IV | VIII | F1 | IVd | 432 |
| IV | VIII | F2 | IVd | 416 |
| IV | VIII | F3 | IVd | 428 |
| IV | VIII | F4 | IVd | 427 |
| IV | VIII | F5 | IVd | 418 |
| IV | VIII | F6 | IVd | 424 |
| IV | VIII | F7 | IVd | 425 |
| IV | VIII | F8 | IVd | 419 |
| IV | VIII | F9 | IVd | 426 |
| IV | VIII | F10 | IVd | 422 |
| IV | VIII | F11 | IVd | 429 |
| IV | VIII | F12 | IVd | 430 |
| IV | VIII | F13 | IVd | 433 |
| IV | VIII | F14 | IVd | 431 |
| IV | VIII | F15 | IVd | 434 |
| IV | VIII | F16 | IVd | 435 |
| IV | VIII | G1 | IVd | 438 |
| IV | IX | A1 | IVd | 444 |
| IV | IX | A2 | IVd | 446 |
| IV | IX | A3 | IVd | 442 |

## Appendix 6 contd.

| Amaravati | | | Catalogue Series No. | |
|---|---|---|---|---|
| IV | IX | A4 | IVd | 443 |
| IV | IX | B1 | IVd | 448 |
| IV | X | 1 | IVd | 454 |
| IV | X | 2 | IVd | 450 |
| IV | X | 3 | IVd | 460 |
| IV | X | 4 | IVd | 451 |
| IV | X | 5 | IVd | 456 |
| IV | X | 6 | IVd | 453 |
| IV | X | 7 | IVd | 461 |
| IV | XI | 1 | IVd | 465 |
| IV | XI | 2 | IVd | 464 |
| IV | XII | 1 | IVd | 467 |
| IV | XII | 2 | IVd | 470 |
| IV | XII | 3 | IVd | 468 |
| IV | XII | 4 | IVd | 471 |
| IV | XIII | 1 | IVd | 472 |
| IV | XIV | 1 | IVd | 473 |
| IV | XV | 1 | IVd | 474 |
| IV | XVI | 1 | IVd | 475 |
| IV | XVII | 1 | IVb | 369 |
| V | I | 1 | Va | 477 |
| V | I | 2 | Va | 482 |
| V | I | 3 | Va | 481 |
| V | I | 4 | Va | 478 |
| V | I | 5 | Va | 479 |
| V | I | 6 | Va | 480 |
| V | I | 7 | Va | 484 |
| V | I | 8 | Va | 483 |
| V | II | A1 | Va | 486 |
| V | II | A2 | Va | 485 |
| V | II | B1 | Va | 487 |
| V | III | 1 | Va | 488 |
| V | IV | A1 | Va | 506 |
| V | IV | B1a | Va | 507 |
| | | | Vb | 510 |
| V | IV | B1b | Vb | 512 |
| V | IV | B1c | Vb | 513 |
| V | IV | B1d | Vb | 514 |
| V | IV | B1e | Vb | 515 |
| V | IV | B1f | Va | 508 |
| V | IV | B1f | Vb | 511 |
| V | IV | B2 | Va | 509 |
| V | V | A1a | Vb | 516 |
| V | V | A1b | Vb | 517 |
| V | V | A2 | Va | 505 |
| V | V | B1 | Vb | 519 |
| V | V | B2 | Vb | 518 |
| V | V | C1 | Va | 504 |
| V | VI | 1 | Va | 501 |
| V | VI | 2 | Va | 503 |
| V | VII | 1 | Vb | 520 |
| V | VIII | 1 | Vb | 521 |
| V | VIII | 2 | Vb | 522 |
| V | IX | 1 | Vb | 523 |
| V | X | 1 | Va | 489 |
| V | XI | 1 | Va | 490 |
| V | XII | 1 | Va | 491 |
| V | XIII | 1 | Va | 492 |
| V | XIII | 2 | Va | 493 |
| V | XIV | 1 | Vb | 524 |
| V | XIV | 2 | Vb | 525 |
| V | XV | 1 | Incomplete omitted | |
| V | XVI | 1 | Va | 495 |
| V | XVII | 1 | Va | 496 |
| V | XVIII | 1 | Vb | 526 |
| V | XIX | 1 | Va | 497 |
| V | XIX | 2 | Va | 499 |
| V | XIX | 3 | Va | 498 |
| VI | I | 1 | Va | 500 |
| VI | II | A1 | VIa | 527 |
| VI | II | B1 | VIb | 540 |
| VI | III | A1 | VIb | 542 |
| VI | III | A2 | VIb | 543 |
| VI | III | B1 | VIb | 576 |
| VI | III | B2 | VIb | 577 |
| VI | III | B3 | VIb | 579 |
| VI | III | B4 | VIb | 578 |
| VI | III | C1 | VIb | 545 |
| VI | III | C2 | VIb | 546 |
| VI | III | D1 | VIa | 528 |
| VI | III | E1 | VIa | 530 |
| VI | III | F1 | VIa | 532 |
| VI | III | F2 | VIa | 531 |
| VI | III | G1 | VIa | 537 |
| VI | III | G2 | VIa | 534 |
| VI | III | G3 | VIa | 535 |
| VI | III | G4 | VIa | 538 |
| VI | III | G5 | VIa | 536 |
| VI | III | H1a<br>b<br>c | VIb | 571 |
| VI | III | I1a | VIb | 552 |
| VI | III | I1b | VIb | 553 |
| VI | III | I1c | VIb | 552 |
| VI | III | I1d | VIb | 553 |
| VI | III | I1e | VIb | 552 |
| VI | III | I2a | VIb | 548 |
| VI | III | I2b | VIb | 549 |
| VI | III | I3 | VIb | 555 |
| VI | III | I4 | VIb | 556 |
| VI | III | I5 | VIb | 557 |
| VI | III | I6 | VIb | 558 |
| VI | III | I7 | VIb | 559 |
| VI | III | I8 | VIb | 550 |
| VI | III | J1a | VIb | 568 |
| VI | III | J1b | VIb | 569 |
| VI | III | J2 | VIb | 570 |
| VI | III | K1 | VIb | 573 |
| VI | IV | A1 | VII | 584 |
| VI | IV | B1 | VII | 585 |
| VI | IV | C1 | VII | 588 |
| VI | IV | D1 | VII | 589 |
| VI | IV | E1 | VII | 590 |
| VI | IV | E2 | VII | 591 |
| VI | V | A1 | VII | 595 |
| VI | V | B1 | VII | 594 |
| VI | V | C1 | VII | 593 |
| VI | V | D1 | VII | 596 |

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## Appendix 7: Cross reference with the British Museum Catalogue

From its publication in 1936 until the first edition of the current work was published in 1985, the British Museum Catalogue of Ancient Indian Coins was the most accessible reference work for the Magadha-Mauryan *karshapana* series. Although BMCAI is seldom used today, a facsimile of the cross reference table from the 1985 edition is reproduced here. It was compiled after examination of the BM coins themselves and is thus perhaps useful as a commentary on its many errors and mis-identifications. Under 'BMC errors' the number refers to the marks where the error occurs, e.g. '4' means 4th mark.

| class | B.M.C. group | variety | Catalogue type no. | BMC errors |
|---|---|---|---|---|
| 1 | I | a | VIb 542 | 4 |
| 1 | I | b | VIb 542 | 4 |
| 1 | I | c | VIb 542 | 4 |
| 1 | I | d | VIb 542 | 4 |
| 2 | I | a | VIb 574 | 4,5 |
| 2 | I | b | VIb 574 | 4,5 |
| 2 | I | c | VIb 574 | 4,5 |
| 2 | I | d | VIb 575 | 4,5 |
| 2 | I | e | VIb 573 | 4 |
| 2 | I | f | VII 596 | 2,4 |
| 2 | I | g | VII 586 | 4 |
| 2 | I | h | VII 584 | 4 |
| 2 | II | a | VIb 570 | |
| 2 | II | b | VIb 570 | |
| 2 | II | c | VII 591 | |
| 2 | II | d | VII 593 | 4, |
| 2 | II | e | VII 589 | 5 |
| 2 | II | f | VII 589 | 4,5 |
| 2 | II | g | VII 594 | 5 |
| 2 | II | h | VIb 550 | 5 |
| 2 | III | a | VIb 560 | |
| 2 | III | b | VIb 550 | 5 |
| 2 | III | c | VIb 550 | 5 |
| 2 | III | d | VIb 555 | 5 |
| 2 | III | e | VIb 556/ 557 | 4,5 |
| 2 | III | f | VIb 566 | |
| 2 | III | g | VIb 566 | |
| 2 | III | h | VIb 567 | 5 |
| 2 | III | i | VIb 567 | 5 |
| 2 | III | j | VIb 567 | 3,5 |
| 2 | VI | e | VIb 546 | 5 |
| 2 | VI | f | VIa 538 | 4,5 |
| 2 | VI | g | VIb 545 | 5 |
| 2 | VI | h | Forgery | |
| 2 | VII | a | VIb 543 | |
| 2 | II or IV | | Vb 524 | 2,3,5 |
| 2 | IV | a | VIb 552 | |
| 2 | IV | b | VIb 548 | |
| 2 | IV | c | Vb 510 | 2 |
| 2 | IV | d | Vb 510 | |
| 2 | IV | e | Vb 510 | 2 |
| 2 | IV | f | Vb 510 | 2 |
| 2 | IV | g | Vb 510 | 2 |
| 2 | IV | h | Vb 510 | 2 |
| 2 | IV | i | Vb 510 | |
| 2 | IV | j | Vb 510 | |
| 2 | IV | k | Vb 516 | 2,3 |
| 2 | IV | l | Vb 516 | 2,3 |
| 2 | IV | m | Vb 519 | 3 |
| 2 | IV | n | Va 503 | 2,3,5 |
| 2 | IV | o | Va 501 | 2,3 |
| 2 | IV | p | Va 505 | 2,3 |
| 2 | IV | q | Va 509 | |
| 2 | IV | r | Va 509 | |
| 2 | IV | s | Va 509 | |
| 2 | IV | t | Va 509 | |
| 2 | IV | u | VIb 572 | 5 |
| 2 | IV | v | VIb 571 | 5 |
| 2 | V | a | VIa 527 | 5 |
| 2 | V | b | VIa 537 | 3 |
| 2 | V | c | Va 488 | 5 |
| 2 | V | d | IVd 475 | 3 |
| 2 | VI | a | Va 499 | 3,4 |
| 2 | VI | b | Va 499 | 4 |
| 2 | VI | c | VIb 577 | |
| 2 | VI | d | ?Va 497 | 3,5 |
| 6 | I | a | III 320 | |
| 6 | I | b | III 323 | 2,5 |
| 6 | I | c | III 327 | 2 |
| 6 | I | d | III 322 | |
| 6 | I | e | IVb 363 | 2,4 |

**Appendix 7 contd.**

| class | B.M.C. group | variety | Catalogue type no. | BMC errors |
|---|---|---|---|---|
| 2 | VII | b | VIb 543 | |
| 2 | VII | c | VIb 543 | |
| 2 | VII | d | VIb 543 | |
| 2 | VII | e | Va 482 | 2 |
| 2 | VII | f | VII 595 | 2 |
| 2 | VII | g | Va 482 | 2 |
| 2 | VII | h | Va 480 | 2 |
| 2 | VII | i | Va 477 | 2 |
| 2 | VII | j | Va 477 | 2,4 |
| 2 | VII | k | Va 479 | 2 |
| 2 | VII | l | Va 484 | 2,4 |
| 2 | VIII | a | Va 478 | 2,4 |
| 2 | VIII | b | Va 481 | 2,5 |
| 2 | VIII | c | IVd 468 | 2 |
| 2 | VIII | d | IVd 471 | 2 |
| 2 | VIII | e | IVd 467 | 2 |
| 2 | IX | a | Va 506 | 2 |
| 2 | IX | b | Va 506 | 2 |
| 2 | IX | c | Va 506 | 2 |
| 2 | IX | d | Va 506 | 2 |
| 2 | IX | e | Va 506 | 2 |
| 2 | X | a | Va 487 | 2,3,4 |
| 2 | X | b | Va 486 | 2,3,5 |
| 2 | XI | a | Va 492 | 2,3 |
| 2 | XI | b | Va 493 | 2,3 |
| 2 | XI | c | VIb 583 | 3,4 |
| 3 | | a | IVb 367 | 3 |
| 3 | | b | IVb 367 | 3 |
| 4 | | a | I 205 | |
| 4 | | b | II 285 | 2 |
| 4 | | c | I 174 | |
| 4 | | d | I 160 | |
| 4 | | e | Kosala | |
| 5 | | a | IVc 393 | 2 |
| 5 | | b | IVc 391 | 2,5 |
| 6 | VI | c | IVd 444 | 5 |
| 6 | VI | d | uncertain | |
| 6 | VI | e | IVd 448 | 2,4 |
| 6 | VI | f | IVd 442 | 4 |
| 6 | VI | g | IVa 353 | 2 |
| 6 | VI | h | uncertain | |
| 6 | VI | i | IVb 380 | 2,3,4,5 |
| 6 | VI | j | III 296 | 2,3,4 |
| 6 | I | f | IVd 454 | 3 |
| 6 | I | g | IVd 465 | 3 |
| 6 | I | h | IVd 464 | 3 |
| 6 | II | a | IVd 451 | 3 |
| 6 | II | b | IVd 456 | 3 |
| 6 | II | c | IVd 450 | 3 |
| 6 | II | d | IVd 456 | 3 |
| 6 | II | e | IVd 450 | 3 |
| 6 | III | a | IVd 406 | 4 |
| 6 | III | b | IVd 419 | 4 |
| 6 | III | c | IVd 416 | |
| 6 | III | d | IVd 418 | |
| 6 | III | e | IVd 426 | |
| 6 | III | f | IVd 424 | |
| 6 | III | g | IVd 425 | |
| 6 | III | h | IVd 434 | |
| 6 | III | i | IVd 434 | 4 |
| 6 | III | j | IVd 428 | 5 |
| 6 | III | k | IVc 392 | 2 |
| 6 | IV | a | IVd 427 | |
| 6 | IV | b | IVd 402 | 2 |
| 6 | IV | c | IVd 402 | 2 |
| 6 | IV | d | IVd 404 | 2 |
| 6 | IV | e | IVd 415 | |
| 6 | IV | f | IVd 410 | |
| 6 | V | a | III 305 | 3 |
| 6 | V | b | III 310 | 3 |
| 6 | V | c | III 305 | 3 |
| 6 | V | d | III 305 | 3,4 |
| 6 | V | e | III 306 | 3 |
| 6 | V | f | IVb 360 | 3 |
| 6 | V | g | III 291 | 2,3,4 |
| 6 | V | h | III 317 | 4 |
| 6 | VI | a | IVd 442 | |
| 6 | VI | b | IVd 443 | |
| 6 | VII | a | IVa 340 | 2 |
| 6 | VII | b | IVa 342 | 2,4,5 |
| 6 | VII | c | IVc 387 | 2,5 |
| 6 | VII | d | II 289 | 2,4 |
| 6 | VII | e | IVa 344 | 4 |
| 6 | VII | f | IVb 371 | 2,5 |
| 6 | VIII | a | Vb 522 | 2,5 |
| 7 | | | Kosala | |

# Appendix 8: Chronology of Series I - multivariate analysis

This table shows the details of the scores allocated to selected symbols and hoards in Series I in the assessment of the chronology. See Section 3 'Introductions to Series' under 'Series I'.

## Key to Appendix 8

* Small issue – scores may have less relevance. Shadowed text signifies issues that are restruck

**Scores** are calculated as follows:

*Elephant mark:* 2 Archaic 'ball head'; 3 No elephant in class; 4 Intermediate curved trunk; 6 Later straight trunk

*Six-armed symbol:* 2 Arrows & ovals; 4 other alternating; 6 Not alternating

*Style:* 2 Crude; 4 Normal; 6 assured

*Golakhpur Hoard:* 2 Present; 3 New class not known at the time of Golakhpur; 4 Absent

*Aurihar Hoard:* 2 Absent; 3 New class not known at the time of Aurihar; 4 Present

*No of marks:* 2 Four; 4 Four or five; 6 Five

*Presence of long-life fifth marks:* 0 Absent in low issue (four or less types); 0.5 Absent in normal issue; 1 Present

**Appendix 8: Chronology of Series I – multivariate analysis**

| Class/ group | Elephant | 6-arm symbol | Style | Golakhpur hoard | Aurihar hoard | no. of marks | Presence of selected long-life 5th marks | | | | | | | | Chron test: scores | Nos of coins in hoard | | | | | PHASE and scores |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | 4 | 28 | 29 | 35 | 30-32 | | Kulkarni | Uziaraghat 2002 | 1999 | Dalamau 2007 | Bihar (Tye) | |
| I I E & F* | 2 | 2 | 2 | 4 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | |
| I I A & D* | 2 | 2 | 2 | 2 | 2 | 2 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 16 | 0 | 0 | 0 | 0 | | |
| I I B & C* | 2 | 2 | 2 | 2 | 2 | 4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 18 | 0 | 0 | 0 | 0 | 1 | |
| I II A & B* | 2 | 2 | 2 | 4 | 2 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | |
| I III | 3 | 2 | 2 | 2 | 2 | 4 | 0 | 0 | 0 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 17.5 | 0 | 0 | 0 | 0 | 6 | **Phase 1** |
| I IV A* | 3 | 2 | 2 | 2 | 2 | 4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 19 | 0 | 0 | 0 | 0 | 2 | below 23 |
| I IV B | 2 | 2 | 2 | 2 | 2 | 4 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 17 | 1 | 0 | 0 | 0 | 1 | |
| I IV C | 2 | 2 | 3 | 4 | 2 | 5 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | |
| I IV D* | 2 | 2 | 2 | 4 | 2 | 6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 22 | 0 | 0 | 0 | 0 | 3 | |
| I XXXIX | 2 | 2 | 3 | 4 | 2 | 6 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 4 | 0 | 10 | |
| I V* | 3 | 2 | 2 | 2 | 2 | 4 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 0.5 | 0.5 | 0.5 | 19.5 | 0 | 0 | 0 | 0 | 0 | |
| I IV E | 2 | 2 | 4 | 4 | 2 | 6 | 1 | 0.5 | 0.5 | 1 | 0.5 | 0.5 | 1 | 0.5 | 24.5 | 0 | 0 | 0 | 0 | 0 | |
| I VI B* | 3 | 3 | 3 | 2 | 4 | 6 | 0.5 | 0.5 | 0.5 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 25.5 | 0 | 0 | 0 | 0 | 1 | |
| I VI E & F* | 2 | 2 | 4 | 4 | 2 | 6 | 0.5 | 0.5 | 0.5 | 1 | 0.5 | 0.5 | 0.5 | 1 | 25 | 0 | 0 | 0 | 0 | 0 | |
| I VI G & H* | 2 | 2 | 3 | 4 | 2 | 6 | 1 | 0.5 | 0.5 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 24 | 0 | 0 | 0 | 1 | 0 | |
| I VII* | 3 | 2 | 3 | 4 | 2 | 6 | 0.5 | 0.5 | 0.5 | 1 | 1 | 0.5 | 0.5 | 1 | 25.5 | 0 | 0 | 0 | 0 | 2 | |
| I XVIII D* | 2 | 2 | 2 | 4 | 2 | 6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 22 | 0 | 0 | 0 | 3 | 0 | |
| I XXXVII | 2 | 2 | 3 | 4 | 2 | 6 | 1 | 0 | 0 | 1 | 1 | 0.5 | 0 | 1 | 23.5 | 0 | 0 | 0 | 0 | 2 | **Phase 2** |
| I XL * | 2 | 3 | 4 | 4 | 2 | 6 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 0.5 | 0.5 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 24-28.5 |
| I XVII | 2 | 2 | 4 | 4 | 2 | 6 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 25 | 0 | 0 | 0 | 0 | 0 | |
| I XLI* | 2 | 6 | 5 | 4 | 2 | 6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0 | 28.5 | 0 | 0 | 0 | 0 | 0 | |
| I XVI A & B | 2 | 3 | 3 | 4 | 2 | 6 | 0.5 | 0 | 0.5 | 1 | 1 | 0.5 | 1 | 0.5 | 25 | 0 | 0 | 0 | 0 | 1 | |
| I XL | 2 | 2 | 3 | 4 | 4 | 6 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | |
| I XVI C | 2 | 3 | 3 | 4 | 2 | 6 | 1 | 0.5 | 0.5 | 1 | 0.5 | 1 | 1 | 0.5 | 26 | 0 | 0 | 0 | 0 | 0 | |
| I VI A | 4 | 2 | 4 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 31 | 3 | 0 | 0 | 1 | 0 | |
| I VI D | 4 | 2 | 3 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 29 | 0 | 0 | 0 | 2 | 0 | |
| I XIV A | 4 | 2 | 5 | 4 | 4 | 6 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 31 | 0 | 0 | 0 | 0 | 0 | **Phase 3** |
| I XIV B | 4 | 2 | 3 | 4 | 2 | 6 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 25 | 0 | 3? | 0 | 3 | 0 | 27-33 |
| I XLII A* | 4 | 4 | 5 | 4 | 2 | 6 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 29.5 | 0 | 0 | 0 | 0 | 0 | |
| I XX A | 4 | 4 | 5 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 33 | 0 | 0 | 0 | 1 | 0 | |
| I XX B* | 3 | 4 | 3 | 4 | 4 | 6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 0 | 0 | 27.5 | 0 | 0 | 0 | 11 | 0 | |
| **I VIII A** | 4 | 2 | 4 | 4 | 2 | 6 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 29 | 1 | 0 | 0 | 3 | 0 | |
| I VIII B | 2 | 4 | 4 | 4 | 2 | 6 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 29 | 0 | 0 | 0 | 0 | 17 | |
| I IX | 4 | 4 | 4 | 4 | 2 | 6 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 30 | 0 | 0 | 0 | 0 | 0 | **Phase 4** |
| I X | 4 | 4 | 3 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 24-36 |
| I VI C | 4 | 2 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 34 | 35 | 0 | 15 | 17 | 0 | |
| I XI B | 4 | 2 | 4 | 4 | 2 | 6 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | |
| **I XI A** | 4 | 2 | 4 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 31 | 0 | 0 | 0 | 10 | 0 | |
| I XIII | 4 | 2 | 2 | 4 | 2 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 27 | 0 | 1? | 0 | 9 | 0 | |
| **I XVIII A** | 4 | 4 | 4 | 4 | 2 | 6 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 30 | 18 | 1 | 0 | 1 | 0 | |
| I XII A | 4 | 2 | 4 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | |
| I XVIII C | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 36 | 15 | 7 | 6 | 14 | 0 | |
| I XXII* | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 0 | 0 | 32 | 9 | 0 | 6 | 2 | 0 | |
| I XXVII | 4 | 2 | 5 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 32 | 14 | 1 | 37 | 12 | 0 | |
| I XLII B* | 4 | 6 | 5 | 4 | 2 | 6 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 31.5 | 0 | 0 | 0 | 0 | 0 | |
| I XXXVIII | 4 | 4 | 2 | 4 | 2 | 6 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 24 | 0 | 0 | 6 | 12 | 1 | |
| I XV | 4 | 2 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 34 | 6 | 0 | 1 | 4 | 0 | |
| I XVIII B | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 35 | 13 | 14? | 6 | 13 | 0 | |
| I XIX | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 35 | 6 | 0 | 2 | 6 | 0 | |
| I XXI | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 35 | 23 | 0 | 5 | 12 | 0 | |
| I XXIII | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 35 | 13 | 0 | 5 | 5 | 3 | |
| I XXIV | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 35 | 22 | 2 | 1 | 14 | 0 | |
| I XXV | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 36 | 5 | 2 | 2 | 5 | 0 | |
| I XXVI | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 34 | 0 | 1? | 1 | 8 | 0 | |
| I XXVIII | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 35 | 0 | 0 | 3 | 13 | 0 | **Phase 5** |
| I XXIX | 4 | 6 | 6 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 37 | 8 | 5 | 20 | 11 | 0 | 30 plus |
| I XXX A | 4 | 6 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 38 | 3 | 3 | 0 | 4 | 0 | |
| I XXXI | 4 | 6 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 38 | 8 | 0 | 5 | 15 | 0 | |
| I XXXII | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 36 | 6 | 1 | 2 | 8 | 0 | |
| I XXXIII | 4 | 4 | 6 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 35 | 26 | 3 | 6 | 10 | 0 | |
| I XXXIV | 4 | 6 | 6 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 36 | 15 | 4 | 5 | 9 | 0 | |
| I XXXV A | 4 | 6 | 6 | 4 | 4 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 38 | 41 | 0 | 0 | 21 | 0 | |
| I XXXV B* | 3 | 6 | 6 | 4 | 4 | 6 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 0 | 0 | 33 | 0 | 0 | 0 | 9 | 0 | |
| I XXXVI | 4 | 2 | 5 | 4 | 4 | 6 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 30 | 16 | 0 | 2 | 20 | 0 | |
| I/II | 6 | 6 | 6 | 4 | 2 | 6 | 1 | 1 | 1 | nr | nr | nr | nr | nr | nr | 20 | 0 | 0 | 22 | 0 | |

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# Appendix 9: Note on Sources for Map 2

The map of hoards (Map 2) has been compiled from the following sources:

Errington, L., 2003. A survey of late hoards of Indian punch-marked coins. *Numismatic Chronicle* 163, 69-121.

Gupta.P.L., *The Amaravati Hoard of punchmarked Coins*, Hyderabad 1963[1].

Narain, A.K., &Gopal, L., Seminar papers on the Chronology of the Punchmarked Coins, Varanasi, 1966[2].

Gupta, P.L., & Hardaker, T. *Ancient Indian silver Punchmarked Coins of the Magadha-Maurya karshapana series*, Nasik, 1985[3].

Various articles in the Journal of the Numismatic Society of India, the Numismatic Digest (IIRNS) and the Newsletters of the Oriental Numismatic Society, London, notably papers by Sharad Sharma, whose vigilance has enabled the retrieval of information about a number of important hoards.

[1] Amaravati Catalogue - In the Catalogue section each type shows the hoards in which it had been found up to 1963.

[2] There is a useful body of hoard data scattered through this collection of seminar papers, much of which was not included in the Amaravati Catalogue or the first edition of this work.

[3] In the first edition, Gupta supplied the data to make the map of hoards (page 36). This data was partly based on the Amaravati Catalogue and where findspots coincide (exactly or approximately) with the Amaravati hoards they are taken to be one and the same place. The stray finds from this map have been omitted.

# Acknowledgements

Perhaps the single most significant event that sparked the writing of the first edition of this work was a letter written in Seaby's Coin and Medal Bulletin in February 1970, by Michael Broome. In it he wondered if there were others in the numismatic world who shared his interest in Oriental coins but could not find fellow enthusiasts. The outcome of that letter was the formation of the Oriental Numismatic Society. In its early days, the Society decided to issue a series of informal 'Information Sheets' of which the first, by the present author, was a brief description of punchmarked coins. That in turn led to a growing number of enquiries from collectors which brought a cascade of coins and photos to my notice, thus helping to widen the Catalogue base to embrace the many finds that were coming on to the market in the 1970s. That flow of data has not ceased in over forty years, and this new edition could not have added so many previously unpublished types without the generous help of vigilant dealers and collectors worldwide.

Those who have helped in this way include (in the chronological order of contact) Michael Broome himself, Scott Semans, Colin Bruce, Boris Watson, Joel Malter, Robert Tye, Carlo Valdettaro, Fred Jeffrey, Dr. Craig Burns, Steve Album, B.A Seaby Ltd, Tony Webdale, Ian Campbell, Bob Senior, Ken Wiggins, R.D.Shah, Don McIntyre, Omar Hamidi, Bill Spengler, Lance Dane, Goga Jain, Kurt Kotchasky, Howard Simmons, Dr. Kenneth Atkins, Dr. Phil Abels, A.H. Baldwin & Sons, Jan Lingen, Harlan Berk, Spink & Sons Ltd., CNG Coins, Les Riches, Jonathan Everett, Shailendra Bhandare, Amin Razar, Elizabeth Errington, Joe Cribb, Bryan Birch, Paul Murphy, J.P. Goenka, Shinji Hirano, Sharad Sharma, Pankaj Tandon, Richard Falkiner, Raghu Raju, Govind Agrawal and Praveen Emmanuel.

The enthusiasm and energy of private individuals, whether collectors or students, has thus been the dominant driving force in bringing this Catalogue to completion. It is to be hoped that more of the vast assemblages of punchmarked coins in the museums in India will one day also be made more easily accessible for study to augment our efforts to reach a complete listing. In the meantime, the entry of coin finds into the public arena, far from destroying the heritage of the Indian Subcontinent, actually keeps the subject alive and allows research to proceed. The frequent loss of provenance of finds is a lamentable but perhaps unavoidable consequence of this state of affairs.

The compilation of the text in this edition has benefitted from advice and comments from many friends, including Shailendra Bhandare, Dr. David MacDowall, Joe Cribb, Elizabeth Errington, Paul Murphy, Sharad Sharma, Robert Tye, Pankaj Tandon, and Michael Mitchiner. Shinji Hirano has generously allowed me to reproduce two new types from Vanga and through correspondence with him these and other similar coins are now placed in a new section of vassal states operating during Series I.

I am especially grateful to Sharad Sharma for assistance in locating the findspots of Series 0 and I coins on Map 5 and for allowing me access to his extensive knowledge of the types in Series 0.

Finally, my greatest thanks must go to K.K. Maheshwari, founder of the Indian Institute of Numismatic Studies in Nasik, Maharashtra (the IIRNS), for his unfailing support and patience, and for bringing out both first and second editions.

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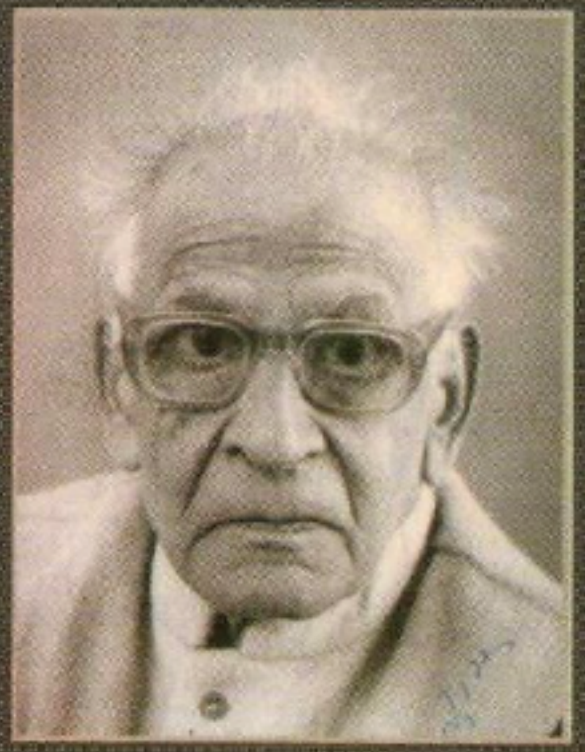
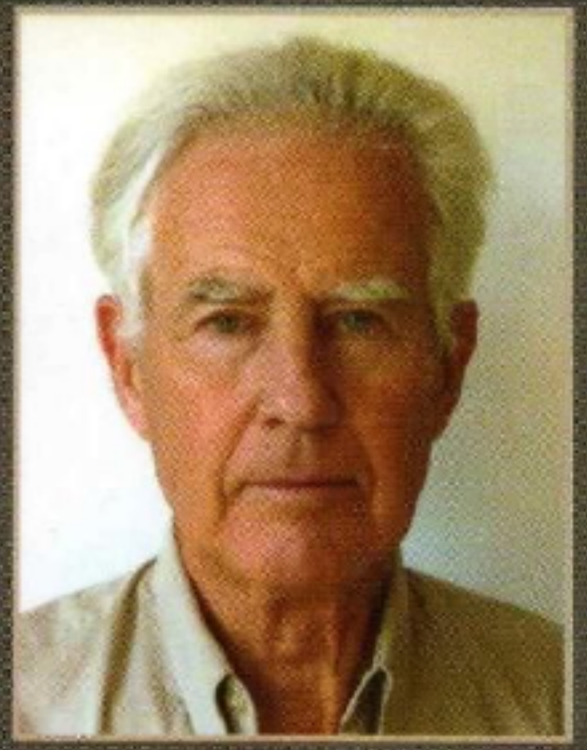


### The Late Dr. Parmeshwari Lal Gupta

An internationally renowned scholar of Indian numismatics, the Late Dr. Parmeshwari Lal Gupta (1914-2001) was a freedom-fighter, journalist, numismatist, and a litterateur all combined in one. Obtaining his Ph.D. from the Banaras Hindu University in 1960 for his pioneering and landmark work on Punchmarked coins, he worked at various places including Bharat Kala Bhavan, BHU, the Prince of Wales Museum, Mumbai, and the Patna Museum, Patna. In 1984, he joined as the first Director of the Indian Institute of Research in Numismatic Studies, and even after retirement continued to serve the Institute as Chairman, Governing Council till his demise. Recipient of numerous awards and medals, he authored several books on Indian numismatics, history, epigraphy and archaeology in English and Hindi.



### Terry Hardaker

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